NATIONAL INSTRUMENT 43-101 INDEPENDENT TECHNICAL REPORT ON THE PARRAL TAILINGS PROJECT CHIHUAHUA, MEXICO HELD BY GRUPO COANZAMEX S.A. DE C.V. (COANZAMEX) A SUBSIDIARY OF GOGOLD RESOURCES INCORPORATED (GOGOLD)

Submitted to:

GoGold Resources Inc.

Date: 20 February 2013

Submitted by:

David S. Dodd, B. Sc (Hon) FSAIMM - The MDM Group, South Africa

David R. Duncan, P. Geo - D. R. Duncan & Associates Ltd., Canada

Ken Kuchling, P. Eng - P&E Mining Consultants Inc., Canada

Project No: 1295P1

CERTIFICATE OF QUALIFIED PERSON

David S. Dodd, B. Sc (Hon) FSAIMM
Chief Metallurgist
THE MDM GROUP
2ND Floor Pangbourne House
382 Jan Smuts Ave.
Craighall, South Africa
Tel: +2711 993 4300
DaveD@mdm-engineering.com

I, David Sidney Dodd, FSAIMM., as a co-author of this report entitled "National Instrument 43-101 Independent Technical Report on the Parral Tailings Project Chihuahua, Mexico Held By Grupo Coanzamex S.A. De C.V. (Coanzamex) A Subsidiary of GoGold Resources Incorporated (GoGold)" prepared for GoGold Resources Incorporated and dated 20 February 2013 (Report), do hereby certify that:

1. I am Chief Metallurgist with MDM Engineering International Limited of Pangbourne House, 382 Jan Smuts Avenue, Craighall, South Africa.
2. I am a graduate of Manchester University, UK in 1974 with a B.Sc (Hon) Chemical Engineering Degree.
3. I am registered as a Fellow of the South African Institute of Mining & Metallurgy in the Republic of South Africa. I have worked as a metallurgist for a total of 36 years since my graduation. My relevant experience for the purpose of the Report is:
   - Research Metallurgist, NCCM, Zambia 1974 to 1976
   - Metallurgist, Envirotech 1976 to 1980
   - Process Engineer, Van Eck & Lurie/Bateman, South Africa 1980 to 1987
   - Technical Director, Metallurgical Design & Management, South Africa 1987 to 2006
   - Manager Technical Services, MDM Technical Africa, South Africa 2006 to 2010
   - Chief Metallurgist, MDM Technical Africa, South Africa 2010 to present
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I visited the Parral Tailings Project Site during August 2012.
6. I am responsible for preparation of the metallurgical, process plant and infrastructure components of the 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 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, the Report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

"signed and sealed"

Dated 20th day of February, 2013
David Sidney Dodd FSAIMM

CERTIFICATE OF QUALIFIED PERSON

David R. Duncan, P. Geo.
D. R. Duncan & Associates Limited
Suite 202, 124 Water St.
Windsor, NS, Canada B0N 2T0
Tel: (902) 798-1841
drduncan@ns.aliantzinc.ca

I, David R. Duncan, P. Geo., currently reside in Wolfville, Nova Scotia, Canada and I am the President and Principal Geologist for D. R. Duncan & Associates Ltd.

This certificate applies to the Technical Report entitled "National Instrument 43-101 Independent Technical Report on the Parral Tailings Project Chihuahua, Mexico Held By Grupo Coanzamex S.A. De C.V. (Coanzamex) A Subsidiary of GoGold Resources Incorporated (GoGold)" prepared for GoGold Resources Incorporated and dated 20 February 2013 (Report), do hereby certify that:

1. I am a registered Professional Geologist in the Province of Newfoundland and Labrador (02910) since 1995. I graduated with a B.Sc. degree from Acadia University, Wolfville, NS, Canada in 1979.
2. I have worked on mineral exploration projects as a geologist in major and junior mineral exploration companies and as a mineral exploration consultant for precious and base metals in Canada, the United States, Mexico, South America and Africa. As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).
3. I visited the Parral Tailings Project on March 8, 9 and 10, 2012.
4. I am responsible for each and every section of the Technical Report.
5. I am independent of Absolute Gold Holdings Inc., Grupo Coanzamex S.A. de C.V. and GoGold Resources Inc. as independence is described by Section 1.5 of NI 43-101.
6. I have had no previous involvement with the property discussed in the Technical Report.
7. I have read NI 43-101 and the Technical Report has been prepared in compliance with that instrument.
8. As of the date of this certificate, 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.

"signed and sealed"

Dated 20th day of February, 2013
David R. Duncan, P. Geo.

CERTIFICATE OF QUALIFIED PERSON

K. Kuchling, P. Eng.
P&E Mining Consultants Incorporated
2 County Court Boulevard, Suite 202
Brampton, Ontario, L6W 3W8
Tel: (905) 595-0575
ken@peconsulting.ca

I, Ken Kuchling, P. Eng., residing at 33 University Ave., Toronto, Ontario, M5J 2S7, as a co-author of this report entitled "National Instrument 43-101 Independent Technical Report on the Parral Tailings Project Chihuahua, Mexico Held By Grupo Coanzamex S.A. De C.V. (Coanzamex) A Subsidiary of GoGold Resources Incorporated (GoGold)" prepared for GoGold Resources Incorporated and dated 20 February 2013 (Report), do hereby certify that:

1. I am a senior mine engineering consultant with KJ Kuchling Consulting Ltd. located at #33 University Ave, Toronto, Ontario Canada contracted by P&E Mining Consultants Inc.
2. I graduated with a Bachelor Degree in Mining Engineering in 1980 from McGill University and a M.Eng Degree in Mining Engineering from UBC in 1984. I have worked as a mining engineer for 30 years since my graduation from university. My relevant work experience for the purpose of the Technical Report is 15 years as an independent mining consultant in commodities such as gold, copper, potash, diamonds, molybdenum, tungsten, and bauxite. I have practiced my profession continuously since 1980. I am a member of the Professional Engineers of Ontario
3. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101
4. My relevant experience for the purpose of the Technical Report is:
   - Associate Mining Engineer, P&E Mining Consultants Inc.2011 – Present
   - Mining Consultant, KJ Kuchling Consulting Ltd., 2000 – Present
   - Senior Mining Engineer, Diavik Diamond Mines Inc., 1997 – 2000
   - Senior Mining Consultant, KJ Kuchling Consulting Ltd., 1995 – 1997
   - Senior Geotechnical Engineer, Terracon Geotechnique Ltd., 1989 - 1995
   - Chief Mine Engineer, Mosaic, Esterhazy K1 Operation., 1985 – 1989
   - Mining Engineering, Syncrude Canada Ltd., 1980 – 1983
5. I completed a 1 day site visit to the Property on September 18, 2012
6. I am responsible for Sections 15, 16, 21.1.5, 21.2.2 of the Technical Report
7. I am independent of the Issuer applying all of the tests in section 1.5 of NI 43-101
8. I have not had prior involvement with the project that is the subject of this Technical Report
9. I have read NI 43-101 and Form 43-101F1 and the Technical Report has been prepared in compliance therewith
10. As of the date of this certificate, 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.

"signed and sealed"

Dated 20th day of February, 2013
Ken Kuchling, P.Eng

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ABBREVIATIONS

Acronym/ Abbreviation	Meaning
3D	Three-dimensional
AA	Atomic absorption
ABA	Acid-base accounting
AC	Alternating current
Actlabs	Activation Laboratories Limited
AgEu	Silver equivalent
AGP	Acid generating potential
ALS	ALS Chemex de México S.A. de C.V.
ANP	Acid neutralising potential
AuEq	Gold equivalent
CAM	Corporación Ambiental de México S.A. de C.V.
CAPEX	Capital expenditure
CAR	Contractors all risk
CCTV	Closed-circuit television
CDN	CDN Resource Laboratories
CIL	Carbon-in-leach
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
CIP	Carbon-in-pulp

Acronym/ Abbreviation	**Meaning**
Coanzamex	Grupo Coanzamex S.A. de C.V.
CRM	Certified reference material
c/w	Complete with
DC	Direct current
DPA	Dibujos Royestos y Asesorias
DRDAL	D. R. Duncan & Associates Limited
EMP	Environmental management plan
EPCM	Engineering, procurement and construction management
ESIA	Environmental and social impact assessment
FCS	Field control station
FEED	Front end engineering design
FEL	Front end loader
FIDIC	Fédération Internationale Des Ingénieurs-Conseils (International Federation of Consulting Engineers)
FOREX	Foreign exchange
GA	General arrangement
GoGold	GoGold Resources Incorporated
GPS	Global positioning system
GMéxico	Grupo México S.A.B. de C.V.
H&S	Health and safety

Acronym/ Abbreviation	Meaning
HAZOP	Hazard and operability study
HHD	Helical hollow drilling
HL	Heap leach
HT	High tension
I/O	Input/output
ICP	Inductively coupled plasma
ICP	Inductively coupled plasma optical emission spectroscopy
INEGI	Instituto Nacional de Estadística y Geografia (National Institute of Statistics and Geography of México)
IRR	Internal rate of return
IVA	Imposta sul Valore Aqqiunto (Value Added Tax)
KCA	Kappes, Cassiday & Associates
LCS	Local control station
LoM	Life of mine
LT	Low tension
LTI	Lost time injury
LTIFR	Lost time injury frequency rate
MCC	Motor control centre
MDM	MDM Engineering Projects Limited

Acronym/ Abbreviation	Meaning
MEL	Mechanical equipment list
MHSA	Mine Health and Safety Act
MOR	Mexican Official Regulation
MS	Mild steel
MSDS	Material safety data sheet
MWMP	Meteoric water mobility procedure
MXN	Mexican peso
NI 43-101	National Instrument Standards of Disclosure for Mineral Projects 43-101
NNP	Net neutralisation potential
No.	Number
NPI	Net profits interest
NPV	Net present value
NT	Near threatened
OESTEC	OESTEC De México S.A. de C.V.
OPEX	Operating expenditure
P&E	P&E Mining Consultants Incorporated
P&G	Preliminary and general
P&ID	Piping and instrumentation diagrams
PA	Potential acid

Acronym/ Abbreviation	Meaning
PFD	Process flow diagram
PFS	Prefeasibility study
PHCA	pH Consultare Ambientales
PI	Professional indemnity
PLC	Programmable logic controller
PLS	Pregnant leach solution
PN	Potential neutralisation
Prodessa	Prodessa Proyecto de Desarrollo Santiago
PROFEPA	La Procuradurìa Federal de Protecciòn al Ambiente (The Federal Attorney for Environmental Protection)
PWD	Parral Public Works Department
QA	Quality assurance
QC	Quality control
QP	Qualified person
RAP	Relocation action plan
RfP	Request for proposal
RH24	Hydrologic Region 24
RL	Rubber lined
RoM	Run of mine

Acronym/ Abbreviation	Meaning
SART	Sulphidation, acidification, recycle and thickening
SCADA	Supervisory control and data acquisition
SLD	Single line diagram
SoW	Scope of work
SMPP	Structural, mechanical, plate work and piping
SPM	Servicios y Proyectos Mineros De México S.A. de C.V.
SS	Stainless steel
TII	Topografia e Ingeneria Integral
UGCS	Unified Grounds Classification System
UNAM	Universidad Nacional Autónoma de México (National Autonomous University of Mexico)
USA	United States of America
USD	United States Dollar
VAT	Value added tax
VSD	Variable speed drive
WAD-CN	Weak Cyanide-Metal Complexes
WBGT	Wet bulb globe temperature
WGS	World Geodetic System

Acronym/ Abbreviation	Meaning
WRB	World Reference Base for Soil Resources (2006)
ZAR	South African Rand

UNITS OF MEASUREMENT

Unit	**Description**
^{o}	Degree
^{o}C	Degree Celsius
$	United States Dollar unit
$/oz.	United States Dollars per ounce
$/t	United States Dollars per tonne
%	Percentage
Ag g/t	Silver grade grams per tonne
AMSL	Above mean sea level
Au g/t	Gold grade grams per tonne
Cu g/t	Copper grade grams per tonne
F_{80} um	Feed size passing 80 micrometres
F_{100} um	Feed size passing 100 micrometres
g	gram
g/l	Grams per litre
g/m^3	Grams per cubic metre
g/t	Grams per tonne
h	Hour
h/a	Hours per annum
h/day	Hours per day
Hz	Hertz
kg	Kilogram
kg/day	Kilograms per day
kg/t	Kilograms per tonne
km	Kilometre
km^2	Square kilometres

Unit	Description
Koz.	Kilo-ounce
kph	Kilometres per hour
kt	Kilo-tonne
kt/m	Kilo-tonne per month
kVA	Kilo-Volt-Ampere
L	Litre
$l/m^2/h$	Litres per square metre per hour
m	Metre
m^3	Cubic metre
m^3/a	Cubic metres per annum
m^3/h	Cubic metres per hour
$m^3/h/m^2$	Cubic metres per hour per square metre
mg/L	Milligrams per litre
min	Minutes
mL	Millilitre
mm	Millimetre
Moz.	Mega-ounce
MPN/100 mL	Most probable number / 100 millilitres
Mt	Mega-tonne
Mt/a	Mega-tonne per annum
MW	Mega-Watt
oz.	Ounce
P_{80} mm	Product size passing 80 millimetres
ppm	Parts per million
t	Tonne
t/a	Tonnes per annum

Unit	Description
t/d	Tonnes per day
t/h	Tonnes per hour
t/m^3	Tonnes per cubic metre
um	Micrometre
V	Volt

1 EXECUTIVE SUMMARY

1.1 Introduction

GoGold Resources Incorporated (GoGold) is a public company listed on the Toronto stock exchange under the symbol "GGD". The company recently appointed MDM Engineering Projects Limited (MDM) to perform a prefeasibility study (PFS) for the process plant and supporting infrastructure associated with the Parral Tailings Project (the Project), located in the state of Chihuahua, Mexico. The Project is held by GoGold's wholly owned Mexican subsidiary, Grupo Coanzamex S.A. de C.V. (Coanzamex). For the purposes of this report, the name GoGold has been used interchangeably for both the parent and subsidiary companies.

The Project comprises dry land tailings deposited from the historical Mina la Prieta silver and base metal mine located in the city of Parral, Chihuahua, Mexico. The tailings was deposited in 2 separate areas, originally referred to as Zones 1 and 2. For the purposes of the PFS, Zone 2 has been divided into 2 sub-areas, referred to in this document as Zones 2A and 2B respectively.

The PFS technical report is submitted herewith as an independent qualified person's (QP) review and according to the National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).

1.2 Location, Climate, Access and Infrastructure

The Project site is located in the city of Hidalgo del Parral, in the Mexican state of Chihuahua. Hidalgo del Parral (Parral City) is one of the 67 municipalities of Chihuahua, with the municipal seat lying within the city. The municipality covers an area of 1,751 km². It is located in the southern part of the state, 220 km from the state capital, the city of Chihuahua. The coordinates of Parral City are 26°56'N 105°40'W.

Parral is situated at an elevation of approximately 1620 m and has an altitude-moderated semi-arid climate with rainfall limited to heavy thunderstorms during the hot summer months. During the dry season from October to May, the days range from mild to hot and nights from chilly to mild. Frost is common though not persistent in the winter. The warmest months are typically July to September and can be humid. Annual precipitation averages 490.5 mm, much of it associated with thunderstorms during the warm months of July to September.

Parral and the surrounding area is well serviced by numerous hotels, restaurants and other services and has a long tradition of mining. There is an ample supply of skilled personnel, equipment suppliers and contractors sufficient for the Project. Electrical power is available from the local grid and water is available at a cost from the local water commission. Telephone and cell coverage are excellent as is access to high-speed Internet.

There is no existing Project infrastructure.

1.3 Geology

The Parral mining district is situated in the centre of the Mexican silver belt epithermal silver-gold vein districts. The geology of this belt is characterised by 2 volcanic sequences of Tertiary age, discordantly overlying deeply eroded Mesozoic sediments and older metamorphic rocks. The physiography of the belt resembles the basin and range area in the western USA, with wide, flat valleys and narrow, relatively low mountain ranges and hills.

The precious metal-bearing fissure vein type of mineral deposit is the most widespread and economically important type of deposit found in the belt. The belt has been recognised as a significant metallogenic province, which has reportedly produced more silver than any other equivalent area in the world.

1.4 Mineralisation

Tailings from the Mina la Prieta mill were impounded on dry ground to the north of the mine and milling complex. The tailings were deposited over many years in flat, consistent layers, dewatered and eventually built up in 5 m lifts into raised heaps reaching a final height of 50 m. The physical consistency of the material is uniform and has an average particle size distribution of 80% passing 0.255 mm.

1.5 Metallurgical Testing

On 21 February 2012, the laboratory facility of KCA in Reno, Nevada received 2 pallets containing 50 off 5-gallon buckets of bulk material from the Jales La Prieta Project site in Mexico. Each bucket contained dry to damp nominal 1.7 mm tailings material and was numbered and labelled by GoGold with zone identification (CM-PJ-001, CM-PJ-002 and CM-PJ-003). The buckets were grouped by zone and number. The material from buckets with similar labelling was combined, producing a total of 25 individual received samples. The received samples were then combined by zone and utilised for metallurgical test work. All preparation, assaying and metallurgical studies were performed using accepted industry standard procedures.

1.6 Mineral Resource Estimate

A digital block model for the resource determination was developed using the computer software, MineSight. The model was prepared by SPM under the supervision of the QP. The database for the model included the 58 holes representing 446 assay samples, 188 samples from the pit channelling and 295 of the perimeter channel samples. All drilling was completed vertically and spaced between 50 and 100 m.

The grade distribution for silver and gold was examined in each domain using percentage cumulative frequency plots to determine if grade capping was required. No grade capping was required.

The block model was constructed in 5 m x 5 m x 5 m block dimensions and grade variables were interpolated using the Ordinary Kriging Method. The Kriging procedure was done on a single pass and the search ellipses were aligned along the principal directions in 100 m spheres. The mineral resource for Zones 1 and 2 was estimated using a global tonnage factor of 1.68 t/m^3.

The interpolation required a minimum of one composite and a maximum of 8 composites for each model block. Each block is capped at a maximum of 4 composites from a single drill hole. The determined mineral resource is presented in Table 1.6-1 which resulted in 21.3 Mt grading 0.31 g/t gold and 38.5 g/t silver. The contained metal content for gold and silver is reported as 213.4 Koz. and 26.4 Moz., respectively.

Table 1.6-1: Mineral Resource Statement at AuEq50 Cut-off of 0.4 g/t

Class / Zone	Au (g/t)	Ag (g/t)	AuEq 50 (g/t)	Qty. (Mt)	Total Au (Koz)	Total Ag (Moz)	AuEq 50 (Koz)	AgEq50 (Koz)
Zone 1								
Measured	0.37	31.1	0.99	1.7	20.8	1.7	55.8	2,790.0
Indicated	0.38	30.7	0.99	10.2	123.5	10.1	325.7	16,285.0
Sub-Total:	0.37	30.8	0.99	12.0	144.3	11.9	381.5	19,075.0
Zone 2								
Measured	0.24	46.8	1.17	2.2	17.0	3.3	83.4	4,170.0
Indicated	0.23	49.0	1.21	7.1	52.5	11.2	276.0	13,800.0
Sub-Total:	0.23	48.4	1.20	9.3	69.5	14.5	359.4	17,970.0

Class / Zone	**Au (g/t)**	**Ag (g/t)**	**AuEq 50 (g/t)**	**Qty. (Mt)**	**Total Au (Koz)**	**Total Ag (Moz)**	**AuEq 50 (Koz)**	**AgEq50 (Koz)**
Zones 1 & 2								
Measured	0.30	39.9	1.09	4.0	37.8	5.1	139.2	6,960.0
Indicated	0.32	38.2	1.08	17.3	176.1	21.3	601.7	30,085.0
Total:	**0.31**	**38.5**	**1.08**	**21.3**	**213.8**	**26.4**	**740.9**	**37,100.0**

Notes to accompany mineral resources:

1. Mineral resources are not mineral reserves and do not have demonstrated economic viability

2. Mineral resources stated a AuEq50 cut-off of 0.4 g/t. This is based on an operating expenditure (OPEX) estimate of USD 11.00/t treated, gold price of USD 1,400/oz and a gold equivalent recovery of 56%

3. The figures in the table may not compute exactly due to rounding

4. The estimate of mineral resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.

1.7 Mineral Reserve Estimate

The mineral reserve has been estimated for the project and was derived from the resource block model developed by DRDAL.

Table 1.7-1: Mineral Reserve

Category	Tonnage	Au (g/t)	Ag (g/t)	AuEq (g/t)
Proven	13,257,500	0.31	38.2	1.07
Probable	7,113,400	0.32	38.9	1.10
Total:	**20,370,900**	**0.31**	**38.4**	**1.08**

*AuEq = Au + (Ag/50)

The mineral reserve shown in Table 1.7-1 is based on a cut-off grade of 0.34 g/t AuEq and incorporates an ore loss of 0% and dilution factor of 0%. Since this is a man-made tailings deposit placed hydraulically, grade changes are very gradational and the underlying foundation will be distinct from the tailings material during mining. These characteristics will minimise any ore loss and dilution impacts.

1.8 Mining Methods

The Parral Project will be developed as a moderate-scale surface mining operation. The scale of production will require mining rates on the order of 5,200 t/day or 1.8 Mt/a of tailings. Waste handling quantities will be minimal.

Table 1.8-1: Mining Zone Tonnages

Zone	Ore Tonnes	Au g/t	Ag g/t	AuEq g/t	Waste Tonnes	Total Tonnes	Strip Ratio
Red Hill	2,949,500	0.07	68.9	1.45	128,600	3,078,100	0.04
Zone 1	11,886,700	0.37	30.8	0.99	50,800	11,937,500	0.00
Zone 2	535,000	0.33	32.7	0.99	21,900	556,900	0.04
Zone 3	3,571,400	0.30	39.9	1.09	34,100	3,605,500	0.00
Parking Lot	1,428,300	0.34	37.7	1.10	50,200	1,478,500	0.00
Total	**20,370,900**	**0.31**	**38.4**	**1.08**	**285,600**	**20,656,400**	**0.01**

1.9 Recovery Methods

1.9.1 Process Background

The Parral Tailings Process Plant (the Plant) is located in Parral, Mexico 220 km from the state capital city of Chihuahua. The Plant is to retreat old tailings from 3 zones (Zone 1, Zone 2A and Zone 2B respectively). The tailings dump was produced from the Mina la Prieta silver and base metal mine, which operated periodically from the 1600's to 1990.

The Plant is designed to process a minimum of 5,000 t/d. The extraction process is by conventional heap leach (HL) by sodium cyanide. Recovery of gold and silver from cyanide solution is by zinc precipitation (Merrill-Crowe Process). The very high silver content of the ore makes this process more cost effective than a carbon-in-leach (CIL) or carbon-in-pulp (CIP) process.

The Plant comprises of tailings reception with a temporary 9,000 t re-mined tailings stockpile, an agglomeration and stacking circuit, a HL circuit, a Merrill-Crowe plant, a copper-acid leaching and precipitation circuit and neutralisation circuit. Testwork on the material has been conducted by Kappes, Cassiday and Associates (KCA) of Reno, Nevada. Plant design is based on the testwork results as shown in the process design basis in Table 1.9.2-1.

1.9.2 Process Design Basis

The plant design is based on a treatment rate of 1.8 Mt/a. The process design basis is detailed in Table 1.9.2-1.

Table 1.9.2-1: Process Design Basis

Line	Production Information	Unit	Detail	Ref
1.00	**Agglomeration/ Stacking**			
1.01	Annual Throughput	t/a	1,800,000	
1.02	Operating Days	days	364	
1.03	Utilisation	%	83	
1.04	Run Hours	h/a	7,280	
1.05	Plant Throughput	t/h	247	
1.06	Plant Throughput (Design)	t/h	250	
1.07	Plant Throughput (Design)	t/d	5,000	
1.08	Reserve Estimate	t	20,370,900	P&E
1.09	Life Of Mine	years	12	
1.10	Feed Average Grade Au	Au g/t	0.32	KCA
1.11	Feed Average Grade Ag	Ag g/t	45.02	KCA
1.12	Feed Average Grade Cu	Cu g/t	756.6	KCA
2.00	**Irrigation**			
2.01	Utilisation	%	92	
2.02	Run Hours	h/a	8,037	
2.03	Calculated Irrigation Flow Rate	m^3/h	228	
2.04	Safety Factor	%	33	
2.05	Design Volumetric Flow	m^3/h	303	
2.06	Recovery Au (Design)	%	65	
2.07	Recovery Ag (Design)	%	58	
2.08	Recovery Cu (Design)	%	45	

Line	Production Information	Unit	Detail	Ref
2.09	Plant Feed Particle Size (100um)	F_{100} um	300	
2.10	Plant Feed Particle Size (80um)	F_{80} um	225	
2.11	Agglomerator Product Particle Size	P_{80} mm	10	
2.12	Leach Residence Time	days	60	
3.00	**Metal Recovery**			
3.01	Utilisation	%	84	
3.02	Run Hours	h/a	7,367	
3.03	Filter Backwash Time	h/d	2	
3.04	Calculated Recovery Flow Rate	m^3/h	331	
3.05	Recovery Flow Rate (Design)	m^3/h	280	
4.00	**Copper Leach Process**			
4.01	Run Hours	h/day	8	
4.02	Run Hours	h/a	2,912	
4.03	Utilisation	%	33	
4.04	Calculated Recovery Flow Rate	m^3/shift	0.89	
5.00	**Copper Filtration Process**			
5.01	Run Hours	h/day	2	
5.02	Run Hours	h/a	728	
5.03	Utilisation	%	8	
5.04	Calculated Recovery Flow Rate	m^3/h	21.1	

1.9.3 Process Description

Ore Reception

Re-mined tailings is transported by haul trucks from the tailings dump to a temporary ore stockpile and loaded via front-end loader (FEL) into a 100 t tipping bin. The feed material is screened and conveyed to the agglomerator.

Agglomeration Circuit

The agglomeration circuit comprises of cement and lime addition systems, a mixing belt and agglomeration drum. The agglomeration drum agglomerates the material at a rate of 250 t/h and to a consistency of 18% moisture by adding barren solution. On discharge from the drum, the agglomerated ore is conveyed to an impervious leaching pad.

Ore Stacking Circuit

The agglomerated material is conveyed to a series of grasshopper conveyors which feed a 600 mm wide by 16.5 m long radial arm stacker. The stacker has a working radius of 75 m stack width and 10 m stacking height with the stinger retracted. Material will be stacked and allowed to cure for 48 hours prior to cyanide irrigation.

Ponds and HL Circuit

Sodium cyanide solution is used as a leachate to spray the heap which is leached for 60 days. The leachate is applied to the heap using a drip irrigation method, at an irrigation rate of 10 $l/m^2/h$. Gold, silver, copper and other metals contained in the ore are dissolved to various degrees by the sodium cyanide solution as it percolates down through the stacked ore and collects at the bottom of the heap. The HL area has 4 main solution ponds namely a pregnant pond, barren pond, emergency pond and release pond.

The Merrill-Crowe Circuit

The precious metal recovery circuit is designed based on the conventional Merrill-Crowe process followed by copper acid leaching and neutralisation circuits. Within the Merrill-Crowe process, 3 circuits exist, namely the clarification circuit, deaeration and zinc precipitation circuit and precious metal filtration circuit.

The clarification circuit comprises of 2 pre-coated type pressure filters and associated solution transfer pumps, area spillage containment and filter cake handling system.

The deaeration circuit comprises of a packed deaeration tower under vacuum and associated vacuum pumps.

The zinc precipitation circuit comprises of a zinc powder storage bin, variable speed drive (VSD) belt feeder with mass meter, mixing cone and precipitate pumps, area spillage containment, a safety shower and lifting hoist. In addition to cyanide, lead nitrate is added to the zinc mixing chamber to aid in the recovery of gold precipitate by preventing zinc passivation.

The precious metal filtration circuit comprises of 3 plate and frame type filters installed in series and a copper leach tank feed conveyor.

Copper Leaching Circuit

The copper leaching circuit is a batch operation which is located inside the gold room for security reasons. The circuit comprises of an agitated stainless steel slope bottom tank as a reactor, circulation pumps, air blowers and a plate and frame filter press.

Neutralisation and Copper Precipitation Circuit

Similarly, the neutralisation and copper precipitation circuit is a batch operation consisting of 2 agitated neutralisation tanks, circulation pumps, a plate and frame type filter press and barren solution return pumps.

Gold Room

The silver-gold cake is further processed in the high security gold room area which contains a single 6-tray calcine oven, smelting furnace, furnace fume hood and relevant refinery tools such as bullion moulds, digital electronic scales and a bullion sample prill drill.

Water Services

Raw Water

Raw water is supplied from the local municipal water system to feed a raw water / fire water tank. The plant raw water demand is used for all major reagents make-up requirements and to top up the barren pond.

Potable Water

Potable water is supplied from the local municipality water system to feed a potable water tank. Potable water is utilised at various safety shower points in the plant and for use in the buildings area.

Reagents Services

Reagent make-up and offloading facilities include cyanide, sodium hydroxide (caustic), sulphuric acid and diatomaceous earth. Where practical, reagents have been located as close as possible to their final area of use to avoid pumping over long distances from make-up areas to the points of use.

1.9.4 Process Plant Opportunities

Process Route

The sulphidation, acidification, recycle and thickening (SART) process may offer an opportunity as an alternative approach to dealing with the copper content of the leach solution. At present it is proposed to leach the copper from the zinc precipitate with sulphuric acid, leaving the gold and silver as a precious metal sludge that will be filtered and smelted to bullion. The copper sulphate solution will be neutralised with caustic to precipitate copper hydroxide.

The SART process precipitates copper from the leach solution as copper sulphide which is readily processed in existing copper smelters. This process also regenerates a significant proportion of the associated cyanide with a resultant reduction in the consumption of the costly sodium cyanide. A significant proportion of the sliver is also expected to co-precipitate with the copper and it will be important to quantify this with test work and evaluate the smelter return for the contained silver. Silver is the predominant revenue provider.

Capacity Increase

The throughput of the process plant should be capable of up to a 20% increase with a modest additional capital cost. The following are the key considerations for a capacity increase:

- The agglomeration drum is considered to be conservatively sized for the duty. Once the operating skills for this critical process step have been well developed, an increase in throughput should be achievable
- The stacking, leach pads and solution pumping should all be readily upgraded with minimal cost
- The clarification filters could be designed to accommodate additional filter plates to increase throughput

- The precious metal filters could similarly be designed to receive additional filter plates
- The subsequent process are all batched and the frequency of batch processes can be readily increased.

1.10 Project Infrastructure

The services being provided to the process plant and HL pad area include water supply, power supply, in-plant roads, haul roads (by others) and process plant buildings. Telephone and radio communications, site office setup, transport to and from site, as well as vehicles for use on site and associated vehicle costs are to be supplied by GoGold and have been included in the owner's cost.

The plant site is situated approximately 240 km from the city of Chihuahua. It is readily accessible by a well-maintained paved highway and is within 10 km of the national power grid.

Generally the erection and installation of structural steel, plate work, piping and valves, mechanical equipment and electrical equipment will be done using local field labour supervised by local Mexican supervisors, as well as expatriates experienced in this work. All steelwork, plate work and piping will be fabricated locally in Mexico.

Certain Mexican companies have been identified as being capable of providing the necessary services and resources for the Project, including but not limited to civil construction, buildings and/or mobile trailers, earthworks and road works.

1.11 Environment

An environmental impact assessment (EIA) has been undertaken to investigate the local and social environment existing prior to the development of the Project and to determine the likely positive and negative impacts that the project will incur on the environment. The timing, extent, intensity and cumulative effects of these impacts have also been investigated.

The Project consists of processing old tailings, which has hazardous characteristics, as well as the potential to generate rock acid drainage and release metals and metalloids, which is deposited without control in a site close to the population of the city of Parral. The proposed process is the operation of a lixiviation system (lixiviation HL and recovery plant) that will be located far from the population, under controls that meet the environmental and Mexican legislative requirements, proving the environmental and socioeconomic balance to be positive for the Project.

1.12 Capital Cost Estimate

The capital cost estimates were based on last quarter 2012 quotes.

Table 1.12-1: Capital Cost Summary

Description	**Total Cost (USD)**
Process Plant & HL Pad	31,337,864
Water Supply Line	650,000
Power Supply (Generators – Initial Payment)	258,824
Property Associated Costs	1,000,000
Owner's Costs	1,800,000
Total Initial Capital Cost Estimate	**35,046,688**

1.13 Operating Cost Estimates

Table 1.13-1: Process Plant Operating Cost Summary

Description	Cost per Tonne (USD/t)
Mining	2.76
Process plant	11.22
Process plant G&A	0.28
Total Operating Cost	**14.26**

1.14 Financial Analysis

The economic evaluation of the Parral Tailings Project as presented in this PFS and prepared jointly by GoGold and MDM assumes the project will be 100% equity financed. GoGold considers the project to be a good candidate for a combination of a dollar loan, equipment lease and equity financing. The effect of including debt financing on the Base Case economics is to increase the rate of return to the equity owners by virtue of a leveraging effect.

For the purposes of the PFS, the evaluation is based on 100% of the project cash flows before distribution of profits to the equity owners. Before-tax annual cash flows are discounted at rates of 0% and 10%.

The results of the economic analysis indicate that exploitation of the Parral Tailings silver/gold tailings deposit is economically viable and should proceed.

Table 1.14-1: NPV Base Case Before and After Tax

Factor	UNIT	NPV Before Tax (USD m)	NPV After Tax (USD m)
0%	$m	230.52	160.91
5%	$m	159.09	107.46
10%	$m	113.43	73.70
IRR	**%**	**80**	**54**

1.15 Conclusions

The PFS has concluded that the GoGold reserves can be easily treated by a conventional heap leach, stacking and agglomeration with Merrill-Crowe processing facility. Similar facilities are currently in operation throughout Mexico and South America. The plant design was based on the results of the extensive metallurgical test programme completed on actual GoGold tailings deposit samples, which showed the suitability of the Merrill-Crowe treatment plant. The tailings will be reclaimed and delivered to the plant from the tailings deposit located in the city of Parral using conventional mining practices and equipment suitable to this type of recovery.

The EIA carried out as part of the PFS has concluded that the Project can be developed in an environmentally responsible manner with significant economic benefits to the city and the local communities. A comprehensive environmental management system will be developed to facilitate and control the environmental and social aspects during the development and operation of the Project.

The costing estimates for the study were prepared late in 2012 and based to a large extent on South African supply and installation rates. Experience and industry indicate that local Mexican rates are much lower than South African rates and thus the company plans to update the cost estimates early in 2013 (during a FEED /

early works phase of the Project) with the aim of significantly improving the financial parameters.

The financial analyses are based on the scenario of 100%-equity financing for the project. The base case model assumes a constant price of gold price of USD 1,475/oz. and silver price of USD 29/oz. and generates a pre-tax IRR of 80%. The forecast capital payback time is within 2 years.

1.16 Recommendations

It is recommended that GoGold:

- Carry out a 3 month FEED and early works phase prior to construction
- Consider negotiating a fixed unit rate mining contract rather than an equipment rental time and materials contract to reduce risks with costs and productivities
- Revisit the HL pad design in order to optimise phased stacking methodology and reduce upfront earthworks capital cost requirement
- Revisit the capital cost estimates in general for possible savings due to optimising the cost estimates from ± 20% to ± 10%
- Further review the capability of local civil and steelwork contractors for possible savings
- Continue negotiations with the regional power authorities on fixing the supply load and power rates
- Consider the SART process as a complement to the Merrill-Crowe process. This cyanide recycling process may see a reduction in reagent consumption, translating to lower OPEX costs.

2 INTRODUCTION AND TERMS OF REFERENCE

2.1 Introduction

GoGold Resources Incorporated (GoGold) is a public Canadian exploration company which trades on the Toronto stock exchange under the symbol, "GGD". The company recently appointed MDM Engineering Projects Limited (MDM) to perform a prefeasibility study (PFS) for the process plant and supporting infrastructure associated with the Parral Tailings Project (the Project), located in the state of Chihuahua, Mexico. The Project is held by GoGold's wholly owned Mexican subsidiary, Grupo Coanzamex S.A. de C.V. (Coanzamex). For the purposes of this report, the name GoGold has been used interchangeably for both the parent and subsidiary companies.

The Project comprises dry land tailings deposited from the historical Mina la Prieta silver and base metal mine located in the city of Parral, Chihuahua, Mexico. The tailings was deposited in 2 separate areas, originally referred to as Zones 1 and 2. For the purposes of the PFS, Zone 2 has been divided into 2 sub-areas, referred to in this document as Zones 2A and 2B respectively.

The PFS technical report is submitted herewith as an independent qualified person's (QP) review and according to the National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).

2.2 Purpose of the Technical Report

The objectives of this PFS are as follows:

- To assess the technical, financial and other parameters affecting the processing of the existing tailings deposit
- To develop a mining plan to support the strategy for operation

- To generate achievable construction and production schedules
- To develop a cost model to an accuracy of ± 20% with cash flows and costs
- To produce a PFS document which will provide the majority of information to allow the development and detailed design and engineering work to progress the project to the next stage, being detail engineering design and subsequent project execution.

The PFS has been developed by a number of key parties with specialist competencies as follows:

- **MDM Engineering Projects Ltd (MDM) –** MDM is an international firm of mineral process engineers has provided the overall study management and strategy. MDM undertook the engineering and costing of all the plant, equipment and associated infrastructure facilities such as water, power and transportation requirements, to an accuracy of ± 20%
- **D. R. Duncan and Associates Ltd (DRDAL) –** DRDAL completed the technical report on mineral resources[1]
- **P&E Mining Consultants Incorporated (P&E)** – P&E completed the final report on the mining reserve estimates and mining methods
- **Kappes, Cassiday and Associates (KCA) –** KCA completed a report on the metallurgical testwork, including column tests and acid/base accounting tests, as well as the HL solution analysis[2]
- **pH Consultores Ambientales (PHCA)** – PHCA completed the technical report for the environmental impact assessment[3]
- **Corporación Ambiental de México, S.A. de C.V. (CAM)** – CAM completed a report on the geotechnical testwork.

2.3 Qualified Person

MDM appointed QP, as defined in NI 43-101 and in compliance with form 43-101F1, responsible for the identified sections of this technical report is:

David S. Dodd, B.Sc (Hon), F.S.A.I.M.M.
Chief Metallurgist
THE MDM GROUP

DRDAL appointed QP, as defined in NI 43-101 and in compliance with form 43-101F1, responsible for the identified sections of this technical report is:

David R. Duncan, P. Geo.
President and Principle Geologist
D. R. DUNCAN & ASSOCIATES LTD.

P&E appointed QP, as defined in NI 43-101 and in compliance with form 43-101F1, responsible for the mining inputs into this technical report is:

Ken Kuchling, P. Eng.
Senior Mining Associate
P&E MINING CONSULTANTS INCORPORATED

2.4 Site Visit

MDM's appointed QP visited the Project site from 13 August 2012 to 17 August 2012, together with GoGold management personnel Mr Robert Harris (chief operating officer), Mr Bradley Langille (strategic advisor), Mr Anis Nehme (director general, Mexico) and Mr Daniel Villalobos (correspondent). The purpose of the site visit was to investigate the proposed Project HL area and associated process plant site. Notes of the site visit were summarised in the "Parral Tailings, Chihuahua, Mexico Site Visit Report 14 & 15 August 2012", Project no. 1295P1.

2.5 Effective Date

The effective date of this technical report is 20 February 2013.

2.6 Previous Technical Reports

A mineral resource report as filed by DRDAL is available under the heading: "Parral Tailings Project Chihuahua, Mexico NI 43-101 Technical Report on Mineral Resources" and dated 11 May 2012.

2.7 Sources of Information

The sources of information as reference throughout this report are as follows:

- Data supplied by GoGold
- Topographical data from the city of Parral
- Technical report by DRDAL on mineral resource estimate[1]
- Report prepared by KCA on preliminary metallurgy[2]
- Information provided by P&E on mining reserve estimate[3]
- Report prepared by PHCA on environmental and social impact study[4]

2.8 Zone References within the Report

The tailings body has been divided into Zones 1, 2A and 2B, as illustrated by Figure 6-1 in Section 6 of this report. For the purposes of mining pit design and phased mining scheduling, these zones have been further subdivided into a total of 5 zones. These zones are indicated in Figure 16.4-1 under Section 16 of this report and are specific to Section 15 and Section 16 of this report.

The zone sub-divisions are as follows:

- Zone 1 = Zone 1A + Zone 1B

- Zone 2A = Zones 2, 3 and the parking lot
- Zone 2B = Red Hill.

3 RELIANCE ON OTHER EXPERTS

Neither MDM, DRDAL or P&E, nor the authors of this report are qualified to provide extensive comment on legal issues associated with the Project and referenced in section 19 of this PFS. The data in this section relies heavily on information provided by GoGold, which has not been independently verified by MDM, DRDAL or P&E.

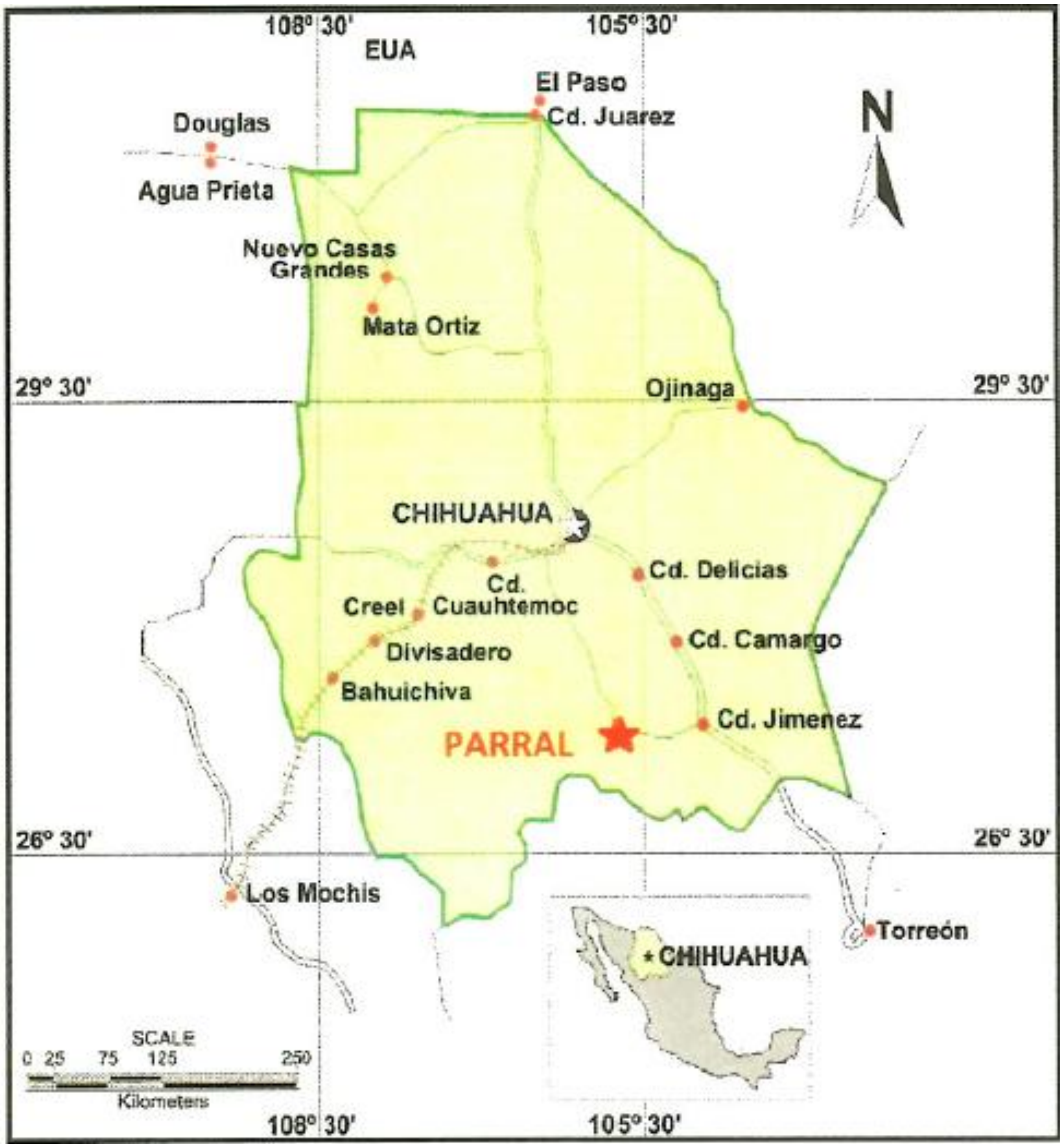
Similarly, neither MDM, DRDAL or P&E, nor the authors of this report are qualified to provide extensive comment on environmental and geotechnical issues associated with the Project and included in section 20 of this PFS. The assessment of data pertaining to these disciplines relies heavily on information provided by GoGold, PHCA and CAM.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Description and Location

The Project site is located in the city of Hidalgo del Parral, in the Mexican state of Chihuahua. Hidalgo del Parral (Parral City) is one of the 67 municipalities of Chihuahua, with the municipal seat lying within the city. The municipality covers an area of 1,751 km². As of 2005, the municipality had a total population of 103,519. It is located in the southern part of the state, 220 km from the state capital, the city of Chihuahua. The coordinates of Parral City are 26°56’N 105°40’W. The Project site location and envisaged HL pad position are indicated in Figure 4.1-1.

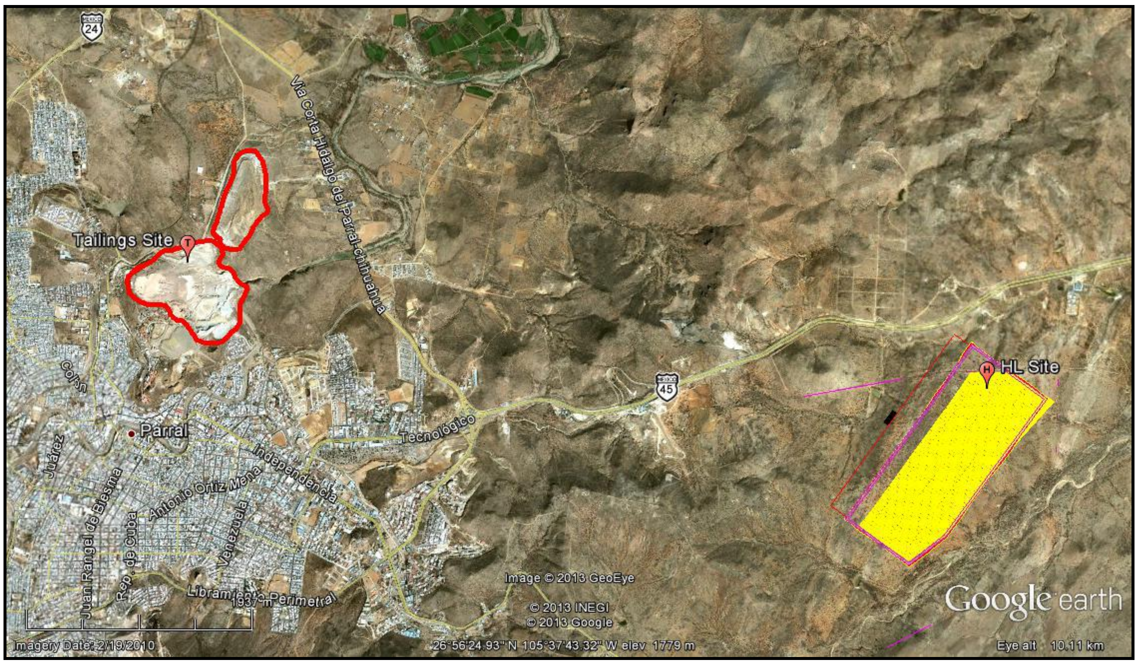
Figure 4.1-1: Location of the Project Site



* Image source: DRDAL April 2012

The Project area is a contiguous 141 ha and extends to the northeast of the town. The details of the Project area, including the property boundary, are shown in Figure 4.1-2 and the co-ordinates detailed in Table 4.1-1. The entire outlined area is owned by the town and does not include any private ownership.

Figure 4.1-2: Location of Tailings and Project Area



* Image source: Google Earth Image January 2013

The town of Hidalgo del Parral purchased the land on which the tailings sit, as well as all rights to the tailings material from the private Mexican mining company, Grupo México S.A.B. de C.V. (GMéxico) in 2008. The tailings were produced by a flotation plant from ore mined from underground workings. GMéxico retains the mineral rights to the mine and the deposit. Although the mine has seen production going back to Spanish conquest days of the 1600's, GMéxico operated the Mina la Prieta as a primary silver and base metal producer from the 1920's to its closure in the 1990's during which time the majority of the tailings were placed. The tailings consist mostly of finely ground material having a particle size distribution of P80 0.225 mm.

Some of the tailings were later retreated by GMéxico from the 1970's to the 1990's for the recovery of fluorspar, and the residue re-deposited back onto the Project site. All of the tailings produced by the mine now reside on the Project site and have experienced limited manmade disturbance for the past 2 decades. The effects of wind and rain on the pile are evident through visible erosion and natural (wind) replacement. Figure 4.1-3 illustrates the tailings.

Figure 4.1-3: View of Zone 2 Tailings Looking South towards Mina La Prieta

Table 4.1-1: Project Boundary Coordinates

V	COORDINATES		V	COORDINATES		V	COORDINATES		V	COORDINATES	
	NORTH	EAST		NORTH	EAST		NORTH	EAST		NORTH	EAST
1	2,979,693	433,937	66	2,979,658	434,426	131	2,980,572	433,808	196	2,980,434	433,844
2	2,979,668	433,918	67	2,979,661	434,432	132	2,980,592	433,766	197	2,980,415	433,843
3	2,979,659	433,944	68	2,979,664	434,438	133	2,980,620	433,726	198	2,980,397	433,842
4	2,979,640	433,938	69	2,979,666	434,444	134	2,980,633	433,713	199	2,980,364	433,847
5	2,979,647	433,920	70	2,979,667	434,450	135	2,980,633	433,693	200	2,980,340	433,841
6	2,979,654	433,907	71	2,979,668	434,455	136	2,980,620	433,695	201	2,980,310	433,851
7	2,979,630	433,887	72	2,979,678	434,492	137	2,980,603	433,691	202	2,980,285	433,875
8	2,979,568	433,834	73	2,979,683	434,509	138	2,980,589	433,686	203	2,980,244	433,929
9	2,979,473	433,778	74	2,979,688	434,521	139	2,980,581	433,680	204	2,980,232	433,979
10	2,979,418	433,765	75	2,979,693	434,531	140	2,980,535	433,637	205	2,980,221	434,047
11	2,979,396	433,758	76	2,979,698	434,539	141	2,980,491	433,607	206	2,980,226	434,055
12	2,979,392	433,759	77	2,979,703	434,546	142	2,980,451	433,581	207	2,980,213	434,089
13	2,979,385	433,784	78	2,979,709	434,554	143	2,980,519	433,549	208	2,980,201	434,106
14	2,979,397	433,793	79	2,979,715	434,560	144	2,980,496	433,545	209	2,980,187	434,111
15	2,979,420	433,891	80	2,979,721	434,565	145	2,980,440	433,573	210	2,980,186	434,119
16	2,979,405	433,885	81	2,979,733	434,572	146	2,980,435	433,570	211	2,980,134	434,160
17	2,979,401	433,879	82	2,979,732	434,574	147	2,980,399	433,602	212	2,980,130	434,151
18	2,979,386	433,859	83	2,979,758	434,585	148	2,980,309	433,601	213	2,980,096	434,148
19	2,979,367	433,833	84	2,979,831	434,619	149	2,980,263	433,607	214	2,980,090	434,149
20	2,979,352	433,840	85	2,979,896	434,651	150	2,980,184	433,608	215	2,980,076	434,146
21	2,979,339	433,853	86	2,979,937	434,652	151	2,980,090	433,612	216	2,980,040	434,126
22	2,979,323	433,870	87	2,979,945	434,654	152	2,980,080	433,586	217	2,980,035	434,123
23	2,979,331	433,879	88	2,980,041	434,674	153	2,980,080	433,584	218	2,980,033	434,121
24	2,979,313	433,908	89	2,980,084	434,689	154	2,980,068	433,584	219	2,980,030	434,119
25	2,979,317	433,932	90	2,980,116	434,696	155	2,980,077	433,609	220	2,980,001	434,113
26	2,979,319	433,943	91	2,980,125	434,722	156	2,980,055	433,612	221	2,979,973	434,103
27	2,979,313	433,947	92	2,980,131	434,720	157	2,980,055	433,619	222	2,979,947	434,087
28	2,979,332	433,961	93	2,980,199	434,718	158	2,980,057	433,619	223	2,979,931	434,071
29	2,979,337	433,993	94	2,980,272	434,747	159	2,980,060	433,619	224	2,979,914	434,047
30	2,979,350	434,012	95	2,980,391	434,772	160	2,980,061	433,621	225	2,979,873	433,975
31	2,979,373	433,994	96	2,980,401	434,772	161	2,980,061	433,622	226	2,979,844	434,030
32	2,979,409	434,042	97	2,980,410	434,772	162	2,980,061	433,622	227	2,979,823	434,058
33	2,979,388	434,068	98	2,980,452	434,897	163	2,980,060	433,634	228	2,979,819	434,061
34	2,979,406	434,090	99	2,980,454	435,047	164	2,980,058	433,638	229	2,979,804	434,049
35	2,979,423	434,110	100	2,980,621	435,448	165	2,980,055	433,643	230	2,979,801	434,040
36	2,979,414	434,119	101	2,980,738	435,059	166	2,980,055	433,651	231	2,979,799	434,029
37	2,979,429	434,140	102	2,981,672	434,853	167	2,980,065	433,645	232	2,979,802	434,009
38	2,979,435	434,167	103	2,981,642	434,780	168	2,980,064	433,642	233	2,979,807	433,984
39	2,979,447	434,185	104	2,981,555	434,712	169	2,980,064	433,639	234	2,979,832	433,960
40	2,979,432	434,196	105	2,981,545	434,705	170	2,980,065	433,637	235	2,979,830	433,956
41	2,979,452	434,221	106	2,981,455	434,660	171	2,980,066	433,628	236	2,979,818	433,943
42	2,979,476	434,249	107	2,981,410	434,644	172	2,980,070	433,619	237	2,979,812	433,934
43	2,979,486	434,260	108	2,981,287	434,603	173	2,980,080	433,621	238	2,979,809	433,924
44	2,979,496	434,271	109	2,981,149	434,558	174	2,980,087	433,621	239	2,979,811	433,915
45	2,979,509	434,288	110	2,980,816	434,452	175	2,980,088	433,625	240	2,979,811	433,912
46	2,979,517	434,305	111	2,980,807	434,450	176	2,980,103	433,624	241	2,979,810	433,912
47	2,979,516	434,313	112	2,980,789	434,445	177	2,980,151	433,620	242	2,979,804	433,898
48	2,979,544	434,350	113	2,980,771	434,432	178	2,980,269	433,622	243	2,979,810	433,896
49	2,979,559	434,371	114	2,980,752	434,414	179	2,980,362	433,610	244	2,979,806	433,888
50	2,979,569	434,384	115	2,980,725	434,373	180	2,980,367	433,610	245	2,979,804	433,889
51	2,979,554	434,396	116	2,980,704	434,329	181	2,980,386	433,613	246	2,979,799	433,877
52	2,979,558	434,405	117	2,980,700	434,314	182	2,980,387	433,613	247	2,979,789	433,880
53	2,979,548	434,412	118	2,980,692	434,294	183	2,980,389	433,617	248	2,979,788	433,889
54	2,979,551	434,415	119	2,980,659	434,195	184	2,980,390	433,617	249	2,979,783	433,892
55	2,979,558	434,423	120	2,980,651	434,169	185	2,980,391	433,618	250	2,979,777	433,891
56	2,979,587	434,405	121	2,980,662	434,123	186	2,980,432	433,617	251	2,979,770	433,889
57	2,979,590	434,404	122	2,980,671	434,100	187	2,980,468	433,616	252	2,979,764	433,879
58	2,979,598	434,402	123	2,980,706	434,042	188	2,980,528	433,643	253	2,979,761	433,873
59	2,979,607	434,402	124	2,980,700	434,028	189	2,980,560	433,682	254	2,979,753	433,851
60	2,979,616	434,403	125	2,980,690	433,994	190	2,980,593	433,721	255	2,979,746	433,857
61	2,979,626	434,405	126	2,980,615	433,887	191	2,980,548	433,810	256	2,979,739	433,869
62	2,979,636	434,409	127	2,980,587	433,857	192	2,980,549	433,837	257	2,979,724	433,858
63	2,979,644	434,413	128	2,980,576	433,841	193	2,980,545	433,838			
64	2,979,651	434,417	129	2,980,575	433,840	194	2,980,510	433,845			
65	2,979,656	434,422	130	2,980,569	433,824	195	2,980,479	433,852			

On 17 October 2011, Coanzamex signed an Option Agreement with the town of Hidalgo del Parral, to mine and process the tailings material for precious metal recovery. The inefficiency of the original flotation process resulted in significant amounts of gold and silver reporting to the tailings.

A summary of the terms of the Option Agreement is given below:

- Coanzamex agrees to pay a rental fee to the town of USD 30,000 /month starting in the month the Option Agreement was signed. Such payments will continue until such time that Coanzamex decides whether or not to develop the Project
- If Coanzamex decides not to develop the Project, then they have no further obligation under the Option Agreement and the rental payments are terminated
- If, however, Coanzamex decides to develop and operate the Project, the rental payments continue over the life of the Project and furthermore, the town is entitled to a net profit interest (NPI) of 12% after the deduction of costs and capital depreciation. There are no royalties due or payable on the Project
- Coanzamex has a period of 6 months from the date of the contract to advise the town on whether it intends to process the tailings
- The town has granted Coanzamex full access to the site for evaluation purposes.

To date, the author was advised by Coanzamex that the Option Agreement remains in good standing and that all required payments to the town are up to date.

The Option Agreement required Coanzamex to advise the town on or before 17 April 2012 whether it intended to exercise its rights under the Option Agreement. Coanzamex advised the town of Hidalgo Del Parral by letter, dated 22 March 2012, that it has exercised its irrevocable right to mine and process the tailings for metal recovery. As a result of the exercise, Coanzamex has acquired 100% ownership in the mineral resource subject to a 12% NPI and has full and irrevocable right to the use of the land.

According to the Option Agreement, Coanzamex is not inheriting any environmental liabilities. All historical disturbances and environmental liabilities rest with the town. Coanzamex has an understanding with the town that if the tailings are retreated the resulting site will be reclaimed to a higher standard in an attempt to mitigate the current issues with dust generation and general site aesthetics.

4.2 Permitting

According to Mexican law, there are a series of permits that are required to support and approve the mining level activities. These permits have been summarised in Table 4.2-1.

Table 4.2-1: Summary of Permits

Stage	Permission	Government Entity	Application Documentation
Before Construction	Authorization on environmental impact and risk	SEMARNAT	Application through an Environmental Impact Statement
	Authorization for Change of Land Use on forest land	SEMARNAT	Application through a Technical Justification Study
During Construction	Concession for domestic water use	CONAGUA	Application
	Permit of wastewater discharge	CONAGUA	Application
During Operation	Environmental License	SEMARNAT	Application
	Registration as a generator of hazardous waste company.	SEMARNAT	Format filling
	Program for the Prevention of Accidents.	SEMARNAT	Document
	Import license of hazardous substances	SEMARNAT	Application
	Plan of hazardous waste management	SEMARNAT	Document
	Plan tailings management	SEMARNAT	Document
	Land Use Permit	MUNICIPIO	Application

The QP is not aware of any other significant factors or risks that may affect access, title, or the right or ability to perform work on the property.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Accessibility

The Project lies within the city limits of Parral and can be easily accessed on a well-maintained paved highway from the city of Chihuahua by travelling 38 km west on national road Chihuahua-Hermosillo/Mexico 16 to Cuauhtémoc and then south for a further 200 km on national road Chihuahua-Valle de Zaragoza/Mexico 24. The estimated travelling time from the state capital to Parral is approximately 2.5 hours. Chihuahua is served by Roberto Fierro Villalobos International Airport with daily flights to the United States of America (USA) and Mexico City, as well as other Mexican destinations. It is the starting point for the Chihuahua–Pacific Railroad, and is also served by Ferromex, a private Mexican railroad. There is an air strip in Parral which can accommodate light aircraft.

5.2 Climate

Parral is situated at an elevation of 1,620 m and has an altitude-moderated semi-arid climate with rainfall limited to heavy thunderstorms during the hot summer months. During the dry season (from October to May) the days range from mild to hot and nights from cool to mild. Frost is common though not persistent in the winter. The warmest months are typically July to September and can be humid. Annual precipitation averages 490.5 mm, much of it associated with thunderstorms during these months. It is expected that any future mining operations will be able to be conducted year-round.

Table 5.2-1: Climatic Data for Hidalgo del Parral, Chihuahua

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °C (°F)	28 -82.4	34 -93.2	34 -93.2	36 -96.8	38.5 -101.3	40 -104	38.5 -101.3	35 -95	36 -96.8	32 -89.6	31 -87.8	30.5 -86.9	40 -104
Average high °C (°F)	18.6 -65.5	20.7 -69.3	24.5 -76.1	27.5 -81.5	30.9 -87.6	32.5 -90.5	29.9 -85.8	28.5 -83.3	27.4 -81.3	25.7 -78.3	22.3 -72.1	19.2 -66.6	25.64 -78.16
Average low °C (°F)	1.7 -35.1	3 -37.4	6.2 -43.2	9.5 -49.1	13.7 -56.7	16.6 -61.9	16.4 -61.5	15.4 -59.7	14.2 -57.6	9.8 -49.6	4.9 -40.8	2.4 -36.3	9.48 -49.07
Record low °C (°F)	−15 -5	−22 (−8)	−16 -3	−2 -28	4.2 -39.6	9 -48.2	7 -44.6	7 -44.6	2 -35.6	−4 -25	−8 -18	−0.1 -31.8	−22 (−8)
Rainfall mm (inches)	8.5 -0.335	5 -0.197	1.6 -0.063	7.9 -0.311	17.1 -0.673	59.3 -2.335	132.3 -5.209	117.9 -4.642	102 -4.016	21.3 -0.839	11.5 -0.453	6.1 -0.24	490.5 -19.311
Avg. rainy days	1.5	1	0.5	1.4	3.2	7.4	14.3	13.4	9.5	3.6	2.1	1.5	59.4

* Image source: Servicio Meteorológico National

5.3 Local Resources and Infrastructure

The town of Parral is well maintained with numerous hotels, restaurants and other services. The area has a long tradition of mining and there is an ample supply of skilled personnel, equipment suppliers and contractors sufficient for the Project. Currently, there is no existing project infrastructure and any consultants or persons carrying out work at the Project site stay in the city and travel to site along the short road access route as required.

The historical Mina La Prieta mine shaft, mill and support buildings are located at the southern end of the property. These facilities are unavailable to the Project.

Electrical power is available from the local grid (Comisión Federal de Electricidad) and water is available at a cost from the local water commission (Junta Municipal De Agua Y Saneamiento).

Telephone and cellular phone coverage are excellent as is access to high-speed internet. Housing is available locally to accommodate any influx of mine staff. At this time, there is no expected need for onsite accommodation at the Project site.

5.4 Physiography, Flora and Fauna

The Project area is characterised by gentle topography and surrounded by rounded hills. The south west end of the site reaches the town of Parral.

The state of Chihuahua has a great diversity of flora due to the large number of microclimates found and the dramatic changing terrain. Parral falls within the Sierra Madre Occidental mountain range.

The flora throughout the Sierra Madre Occidental mountain range varies with elevation. Pine and oak species are usually found at an elevation of 2,000 m AMSL. The lower elevations have steppe vegetation with a variety of grasses and small bushes which are common around the Project site. Several species of Juniperus are common in the area.

The flora on the Project site is sparse largely because of the poor growing potential of the tailings material and the limited historical reclamation.

The fauna in the general area is also diverse. The area is frequented for example by the Mexican fox squirrel, jackrabbits, hooded skunk, wild boar, deer and reptiles such as the black-tail rattlesnake.

5.5 Surface Rights

Parral owns the surface rights and, as per the Option Agreement, the company has full access and rights to the site for evaluation, development and commercial production purposes.

6 HISTORY

In the seventeenth century, with the discovery of rich veins of silver, copper, quartz, lead and other valuable minerals, came about the explosive growth of the colonial city, Hidalgo del Parral (often known just as Parral), connecting to the north through Ciudad Jiménez (77 km).

In 1629, Juan Rangel de Viezma discovered La Negrita, the first mine in the area, now known as Mina la Prieta. Rangel founded the mining settlement in 1631 under the name of San Juan del Parral. On 8 September 1944, severe damage was caused by a flood but the mine stayed in operation from 1629 to 1974.

In 1920, the silver and base metal mine came under the operation of Grupo México S.A.B. de C.V. (GMéxico), who produced tailings as a waste product from the flotation process used to recover the valuable metal concentrate. The tailings was deposited in a valley to the north of the mine and created 2 piles referred to as the El Salvage and Sulfuros tailings deposits. In the early 1970's, GMéxico built a new flotation mill facility, located about 800 m north of Mina la Prieta, to re-treat the El Salvage and Sulfuros tailings and recover fluorspar. GMéxico hydraulically mined the tailings to a pond area before pumping the tailings to the new plant.

Tailings from the fluorspar plant was initially deposited in the area known as Veta Colorada until there was no more space available. A new tailings deposit, the Santa Rosa, was created to the north and GMéxico continued to pump tailings from the fluorspar mill to the Santa Rosa deposit until all activities ceased in the 1990's. The Santa Rosa deposit is referred to as Zone 1 and the remainder as Zones 2A and 2B. See Figure 6-1 for the zoning of the tailings dumps.

Figure 5.5-1: Tailings Deposit Zoning

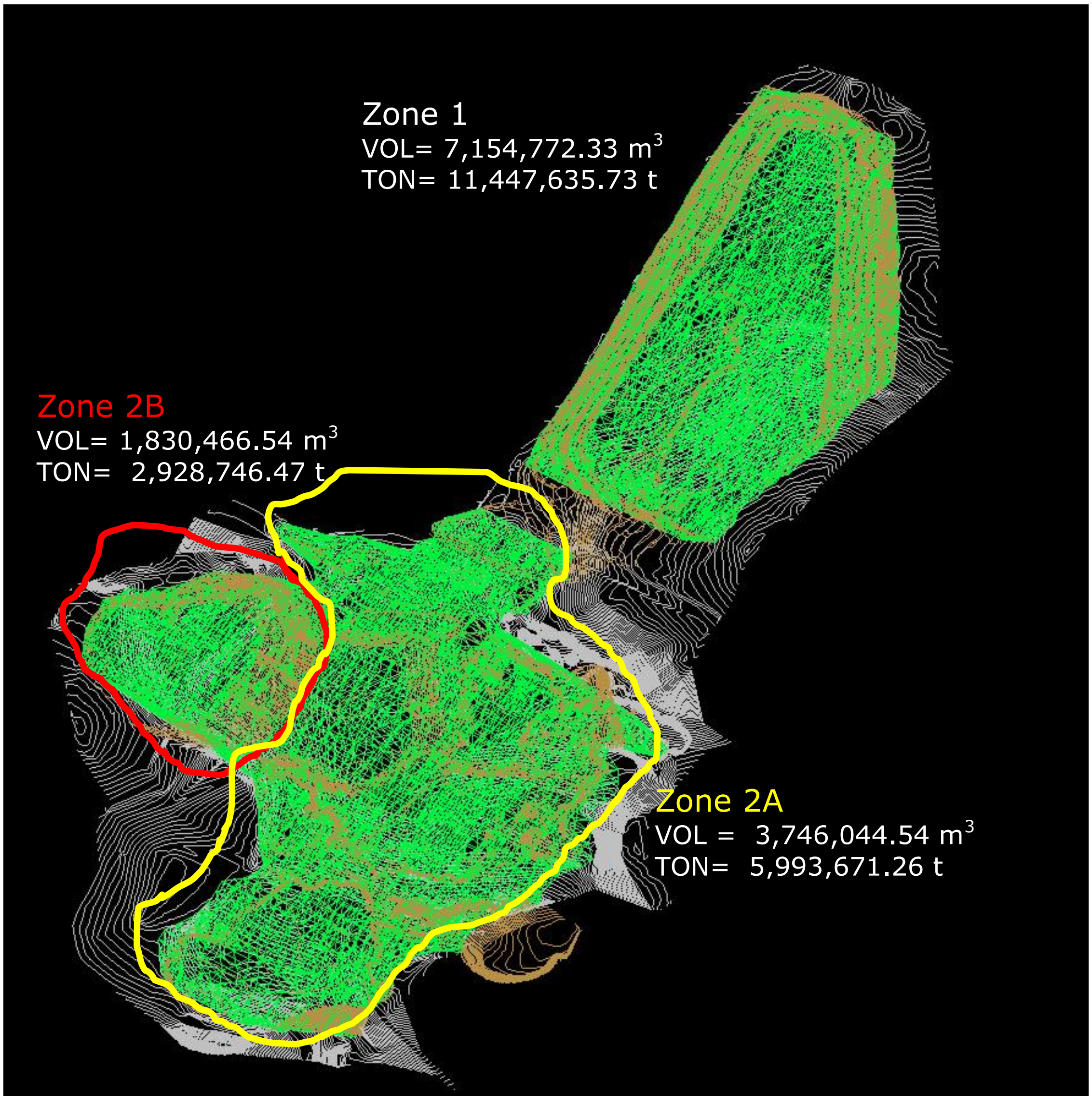


*Image supplied by GoGold, July 2012

In 2008, the city of Parral purchased the tailings deposit from GMéxico, as well as the land which the tailings occupies. A legal survey of the property boundary was completed at that time and a detailed topographic map at 1 m contours was produced with digital maps generated in AutoCAD. A gravelled parking lot exists over a portion of the El Salvage tailings. This was built to accommodate the annual Mina la Prieta festival.

The site remained inactive until the city signed an Option Agreement with GoGold in October 2011 over the exploration, mining and processing of the tailings for precious metal (gold and silver) recovery. Field work commenced in late 2011 and pit and trench sampling, auger drilling, density measurements, surveying and metallurgical testing was completed by early 2012. These activities provided the required data and information for a resource determination as detailed in this report.

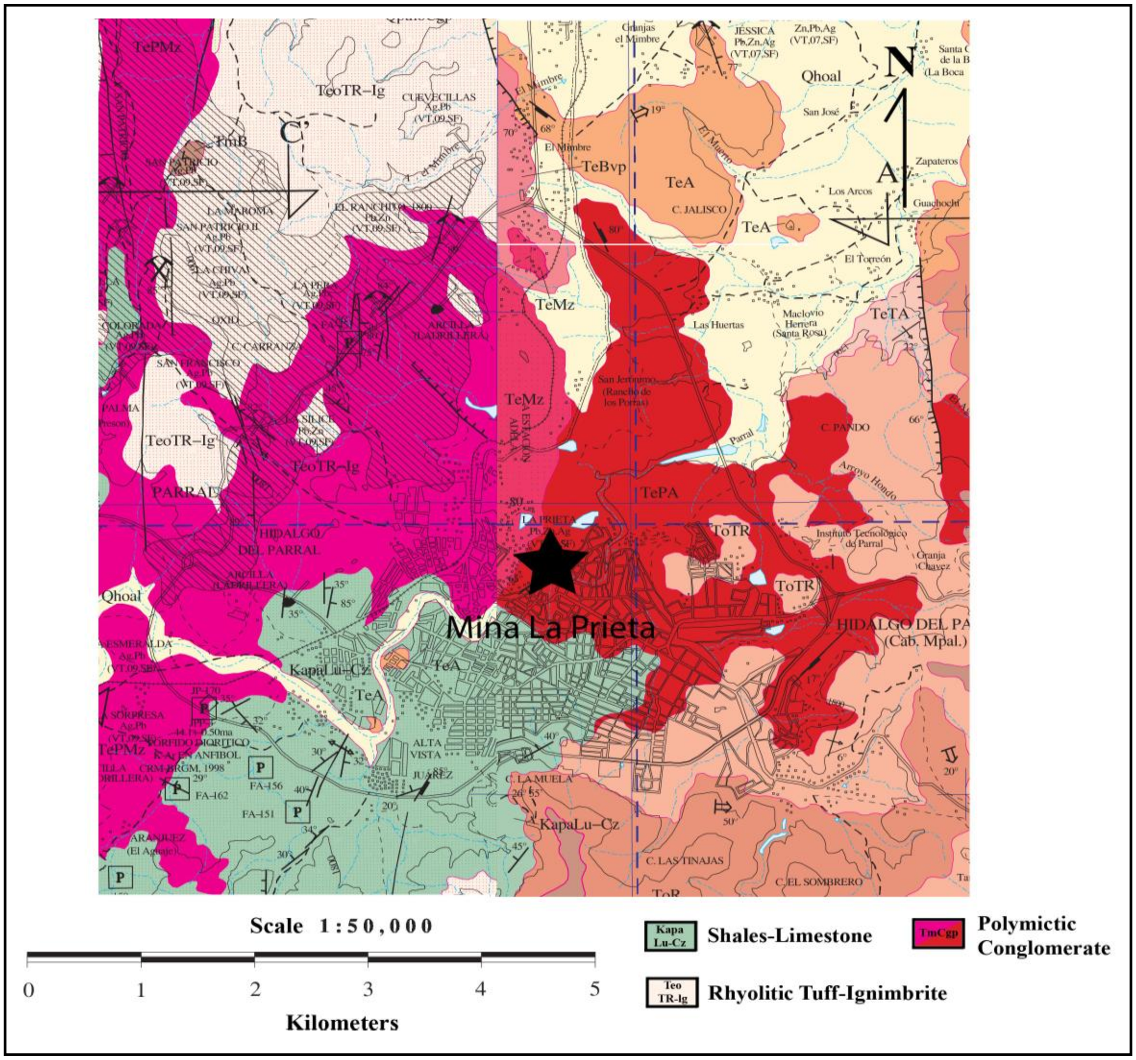
7 GEOLOGICAL SETTING AND MINERALISATION

7.1 Regional Geology

The Parral mining district is situated in the centre of the Mexican silver belt epithermal silver-gold vein districts. The geology of this belt is characterised by 2 volcanic sequences of Tertiary age, discordantly overlying deeply eroded Mesozoic sediments and older metamorphic rocks. The physiography of the belt resembles the basin and range area in the western USA, with wide, flat valleys and narrow, relatively low mountain ranges and hills. See Figure 7-1 for a map of the regional geology of the area.

The precious metal-bearing fissure vein type of mineral deposit is the most widespread and economically important type of deposit found in the belt. The belt has been recognised as a significant metallogenic province, which has reportedly produced more silver than any other equivalent area in the world.

Figure 7.1-1: Regional Geology Map of the Parral Mining District



* Image provided by DRDAL, Mexican Geological Survey maps, Santa Barbara G13-A57 and G13-A58, scale 1:50,000, April 2012

7.2 Property Geology

The property is underlain by 3 major units ranging from Cretaceous to Tertiary. The oldest of which is the Parral Formation, a deformed series of black shale, sandstone and calcareous marine sediments, intruded by hypabyssal andesites which are overlain by a Tertiary volcanic sequence. An oval-shaped quartz monzonite pluton intrudes the Parral Formation near to the Mina la Prieta.

7.3 Parral Formation (Cretaceous)

The oldest rocks are carbonaceous greywackes, shale and thin-bedded limestone of the Parral Formation. This thick sequence covers a broad region extending from Parral south to the Santa Barbara mining district where it hosts significant silver-lead-zinc mineralisation. In the Parral district, these rocks deformed into broad folds with north-south trending axes.

7.4 Intrusive Rocks (Tertiary)

The largest body of intrusive rock on the Mina la Prieta property is a hypabyssal andesite. In the Mina la Prieta mine workings, the quartz monzonite intrusive varies from porphyritic monzonite in the deeper levels to a porphyritic dacite (younger phase of the monzonite) in the higher levels of the mine.

8 DEPOSIT TYPES

The Mina la Prieta mineralisation occurs in NE-SW treading vein structures. It is a low to intermediate-sulphidation epithermal vein system with a strong vertical zonation of the precious and base metals. Near the surface, the vein carries gold-silver-lead-zinc in a matrix of quartz, barite and fluorite. Lead-zinc grades reached a maximum of 20% combined to a depth of 350 m and then decreased gradually towards the lower levels. Silver values are somewhat variable but tended to slowly decrease with depth, ranging from 600 g/t to 50 g/t in the last level (25). Copper values are very low in the upper part of the vein but increase up to 1% in the lower levels.

There are 2 important fault systems controlling the main vein structures in the Mina la Prieta area. The Columbus Fault strikes NNW, having an average dip of 52° to the west and is easily observed on the surface. The America Fault strikes NNE and dips 55° to the east. Although there are no depressions in the topography, the Parral River follows the course of the fault.

The mine originally worked several vein systems such as the Prieta-Pit-Europa vein and the Iguana vein, as well as other secondary veins known as the No.2, the No.3, the Jesus Maria, Pancitas, La Plata, Colon and others. The Prieta-Pit-Europa vein ran NE at 45° and dipped between 65° to 90° to the east. The average width of the vein varied from 2 to 20 m and up to 42 m wide in places.

The Prieta-Pit-Europa vein was mined over a strike length of 1,500 m from surface to a depth of 750 m (level 25). Mining ceased in 1974 when GMéxico closed the Mina la Prieta underground operations.

The mineral deposit being mined in this study consists of the man-made tailings stack created during the processing of ores from the aforementioned in-situ deposits.

8.1 Mineralisation

Tailings from the Mina la Prieta mill were impounded on dry ground to the north of the mine and milling complex. The tailings were deposited over many years in flat, consistent layers, dewatered and eventually built up in 5 m lifts into raised heaps reaching a final height of 50 m. The physical consistency of the material is uniform and has an average particle size distribution of 80% passing 0.255 mm.

Zone 1 is approximately 800 m long by 400 m wide across the base and 50 m high. This is deposited on the side of a broad flat hillside sloping to the northwest. Zones 2A and 2B collectively, is approximately 600 m long by 600 m wide and averages 15 m in height. During the 1970's to the 1990's tailings from the Zones 2A and 2B area was re-treated by GMéxico in order to recover fluorspar before being re-deposited to form the Zone 1 deposit.

8.2 Comments on Section 8

In the opinion of the QP, the mineralisation style and setting of the Project tailings deposits are sufficiently well understood to support the mineral resource estimation.

9 EXPLORATION

Exploration has been undertaken by GoGold and its contractors. Exploration activities on the Project have included legal and topographical surveying, geological mapping, channel sampling, trenching, auger drilling, bulk density testing and metallurgical testing of samples.

9.1 Grids and Surveys

GoGold uses the World Geodetic System (WGS) 84 13N Zone datum for the project.

The town of Parral Public Works Department (PWD) prepared a detailed topographic survey in 2010 covering the entire Project area. The topographical data with topographic contours at 1 m intervals is presented in digital form (AutoCAD 12) at a scale of 1:5,000. In addition, the PWD produced in digital form (AutoCAD 12) a map of the entire town at a scale of 1:12,000, including the Project area.

9.2 Geological Mapping

During 2011, GoGold performed preliminary geological mapping surveys around the property. Outcrop in the area is limited and was brought into the MineSight database.

9.3 Geochemistry

At the time, GoGold employed the services of Servicios y Proyectos Mineros De México S.A. de C.V. (SPM) to complete an initial reconnaissance sampling programme on the tailings. A total of 67 samples were collected from hand dug pits in a random pattern across the tailings deposit (See Figure 9.5-1 for a sample location map). The samples (SPM-P-001 to 067) weighed about 3 kg each and were sent to Activation Laboratories Limited (Actlabs) in Zacatecas for gold and silver assay (Table 9.3-1).

Table 9.3-1: Gold, Silver and Eq. Gold Values for SPM Samples by Actlabs

SPM Sample	Au (g/t)	Ag (g/t)	AuEq50
Low Value	0.027	14	0.028
High Value	0.870	90	1.720
Average	0.269	41	0.825

A second set of samples was taken at each site to generate a composite sample for the preliminary metallurgical test programme at KCA. The KCA head analyses for gold and silver were 0.334 g/t Au and 47.2 g/t Ag respectively. No other geochemistry survey work has been completed to date.

9.4 Geophysical Surveys

No geophysical survey work has been completed to date.

9.5 Backhoe Pit Sampling (PP Sample Series)

In the fall of 2011, GoGold began a sampling programme on the tailings deposit. A John Deere backhoe was used to dig a series of pits, typically 2 m to 4 m deep to provide access to clean, unweathered samples of the tailings.

A total of 192 pits were excavated (PP-001 to 192) providing 188 samples for gold and silver assay on a 50 m x 50 m pattern across the tailings deposit (see Figure 9.5-1 for a location map of the 2011 backhoe pit sample locations.) The same procedure was employed to collect the samples at each trench location. The north face of the trench was marked, measured from top to bottom and then a 5 cm wide channel cut approximately 10 cm deep into the face from the top of the excavation to the floor of the trench. The individual samples were logged, bagged and sent to Actlabs for gold and silver assay. The location of the trench samples were surveyed and entered into the database in a similar fashion as segments of short vertical drill holes.

Figure 9.5-1: Location Map of the 2011 Backhoe Pit Sample Locations

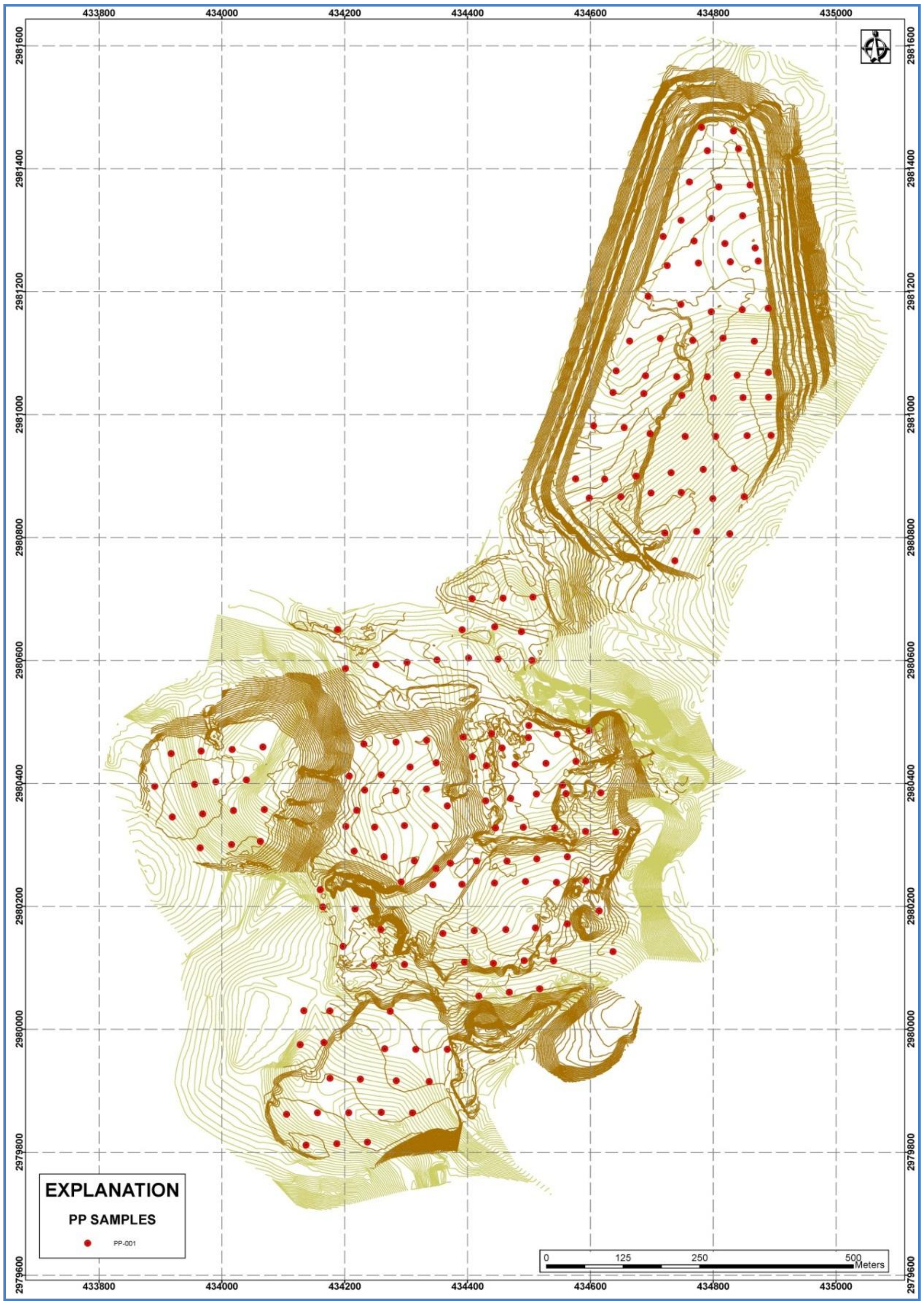


*Image supplied by SPM, April 2012

9.6 Channel Sampling (PT Sample Series)

Vertical channel samples of the tailings were collected in a number of locations around the perimeter of the tailings slopes where it was not possible to position the truck-mounted drill. Figure 9.6-1 below shows a typical channel sample on a vertical face of the tailings pile.

A total of 295 samples ranging between 2 m to 5 m in length (856 m total length) were collected and assayed for gold and silver by Actlabs. (See Figure 9.6-2 for a location map of the 2011 channel samples.)

Figure 9.6-1: Photograph of a Typical Channel Sample (PT Sample Series)

The truck-mounted drill system was not capable of reaching all areas of the tailings deposit. Side slopes and exposed vertical faces of the tailings were sampled using conventional channel samples. These samples were collected a various elevations throughout the tailings deposit and entered into the model similar to the trace of a drill hole.

Figure 9.6-2: Location Map for 2011 Channel Samples

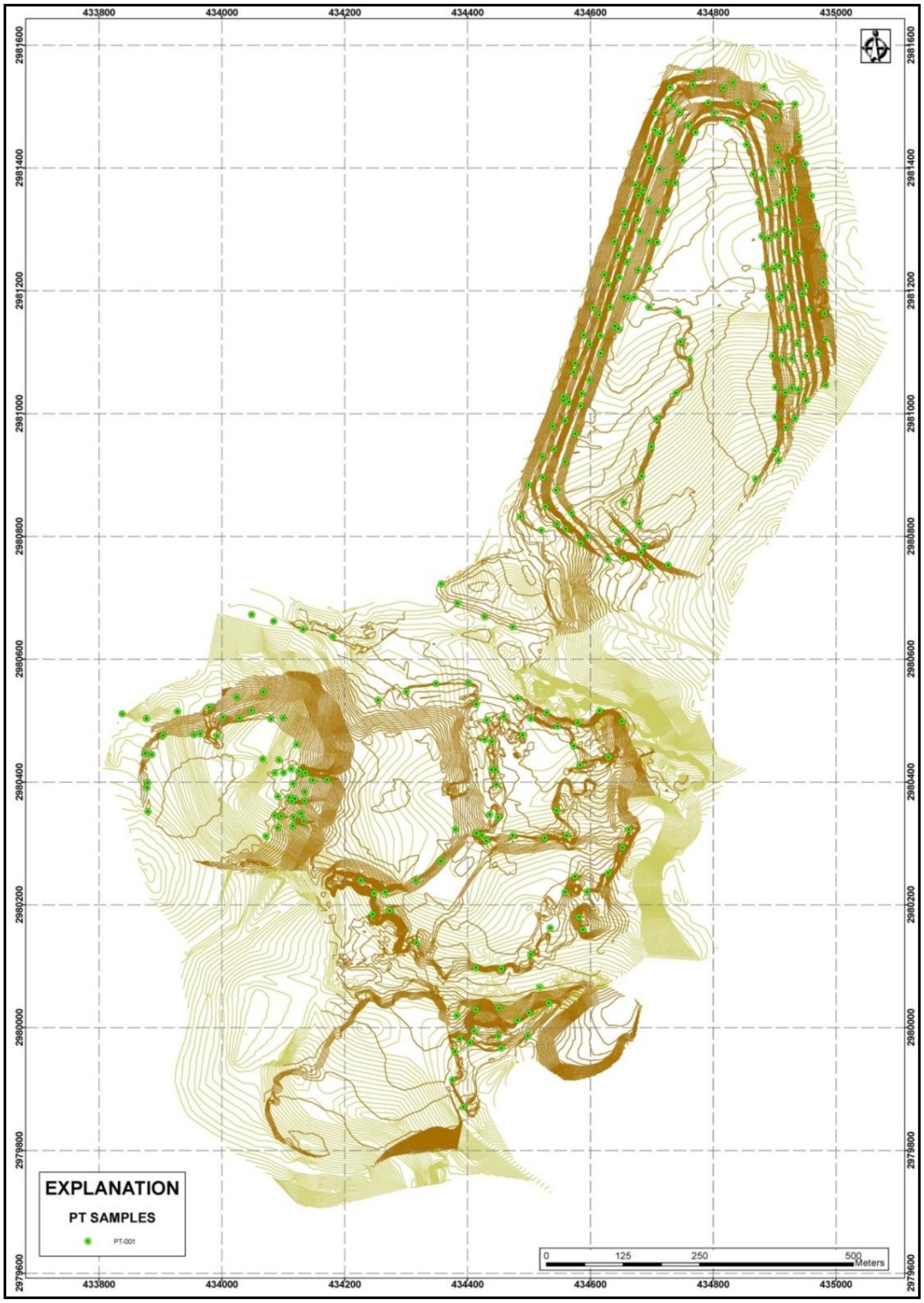


*Image supplied by SPM, April 2012

9.7 Bulk Density Determinations

A total of 2 data sets were collected to determine the wet and dry bulk density factors and the overall moisture content of the tailings.

9.8 Proctor Test Densities

OESTEC de México S.A. de C.V. (OESTEC) of Hermosillo, Mexico (independent of GoGold) was contracted to carry out Proctor Tests on the tailings using a nuclear density meter.

Nuclear density meters are a quick and accurate way of determining density and moisture content. The meter uses a radioactive isotope source (Cesium 137) at the soil surface (backscatter) or from a probe placed into the soil (direct transmission). The isotope source gives off photons (in the form of Gamma rays) which radiate back to the meter's detectors on the bottom of the unit. Dense soil absorbs more radiation than loose soil and the readings reflect overall density. Water content (ASTM D3017) is also detected, all within a few minutes.

A total of 74 measurements were collected from 55 stations distributed across the top and sides of the tailings. The procedure involved digging a 2 m to 3 m deep trench using a John Deere backhoe and collecting 2 sets of readings in each trench; the first set of data recorded at a depth of 1 m below the surface and the second at the bottom of the trench.

9.9 Shelby Tube Densities

OESTEC was contracted to carry out Shelby Tube tests on the Parral tailings. A total of 15 samples (6 cm x 15 cm Shelby Tubes) were collected at depths of 3 m in freshly dug backhoe trenches. Loose material and debris was cleaned from the trench bottom, the Shelby Tube was manually hammered down into the tailings material and then removed, plastic caps placed on both ends then sealed airtight with tape. OESTEC transported the samples to the OESTEC laboratory in Hermosillo for both wet and dry bulk density tests in order to determine the moisture content. Results of the tests are summarised in Table 9.9-1.

Table 9.9-1: Summary of Dry Bulk Density Tests by OESTEC

AREA	METHOD	SAMPLE SITES	WET BULK DENSITY (Kg/ m^3)	MOISTURE CONTENT (%)	DRY BULK DENSITY (Kg/ m^3)	AVERAGE WET BULK DENSITY (Kg/ m^3)	AVERAGE MOISTURE CONTENT (%)	AVERAGE DRY BULK DENSITY (Kg/ m^3)
1	NUCLEAR PROCTOR TEST	1-11 , 14,15,16,17	1802.18	6.50	1692.18	1831.41	3.25	1776.42
	SHELBY TUBE SAMPLE	11,15 Y 17	1860.65	0.00	1860.65			
2	NUCLEAR PROCTOR TEST	21,25,26,19,52,53	1792.20	0.00	1792.20	1792.10	0.00	1792.10
	SHELBY TUBE SAMPLE	21,25	1792.00	0.00	1792.00			
3	NUCLEAR PROCTOR TEST	41, 44, 43, 45	1761.90	0.00	1761.90	1647.22	5.17	1575.41
	SHELBY TUBE SAMPLE	45	1532.53	10.34	1388.92			
4	NUCLEAR PROCTOR TEST	34,35,37,38,39,51	1952.00	7.78	1811.10	1840.26	3.89	1769.81
	SHELBY TUBE SAMPLE	35,38,51	1728.52	0.00	1728.52			
5	NUCLEAR PROCTOR TEST	40 46	1982.27	14.22	1735.48	1987.53	22.18	1633.38
	SHELBY TUBE SAMPLE	40,46	1992.79	30.14	1531.27			
6	NUCLEAR PROCTOR TEST	49,48,50	1889.31	5.58	1789.46	1748.76	14.37	1547.62
	SHELBY TUBE SAMPLE	48,50	1608.21	23.16	1305.79			
							Average Dry Bulk Density:	**1682.46**

9.10 Geotechnical and Hydrology

Geotechnical work in the area is ongoing. No geotechnical work has been completed to date.

9.11 Other Studies

No other studies have been carried out in the Project area.

9.12 Exploration Potential

All tailings deposits on the Property have been investigated.

9.13 Comments on Section 9

In the opinion of the QP, the exploration programmes completed to date are appropriate to the style of the deposits within the Project.

A description of the geology and mineralisation of the tailings deposit, which includes depositional history and thickness of the mineralised zones, is given in Sections 7 and 8.

A description of the sampling methods, location, type, nature and spacing of samples collected on the project is included in Section 9.

A description of the auger drilling programme, including sampling and recovery factors, are included in Section 10. All collection, splitting and bagging of auger, pit and channel samples were carried out by SPM personnel. No material factors have been identified with the drilling / sampling programmes that could affect mineral resource estimation.

Drill hole collar, vertical channel sample and backhoe pit locations and distributions indicate that the sizes of the sampled areas are representative of the distribution and orientation of the mineralisation.

Data validation of the drilling and sampling programme is discussed in Section 12, and includes a review of the database audit results.

In the opinion of the QP, the sampling methods are acceptable, meet industry-standard practice and are adequate for the mineral resources estimation. These include the following:

- Data has been collected following Project-approved sampling protocols
- Sample collection and handling was undertaken in accordance with industry-standard practices, with procedures to limit potential sample loss and sampling bias
- Sample intervals in auger drilling, comprising 2.5 m intervals, are considered to be adequately representative of the true thicknesses of the tailings. Sampling is performed on strict increments (length of drill rod) regardless of lithology
- Bulk density and moisture content determination procedures are consistent with industry-standard procedures
- There are sufficient acceptable bulk density determinations to support the tonnage factor value utilised for the tailings tonnage interpolations for the mineral resource estimate.

10 DRILLING

Total drilling completed by GoGold in 2011 on the Project comprised 58 auger holes totalling 1,076.1 m. The collar locations are presented in Figure 10.2.5-1.

10.1 Legacy Drill Programmes

There are no records of any previous drilling programme on the La Prieta Tailings.

10.2 GoGold Drill Programme

10.2.1 Drill Contractor

GoGold contracted CAM of Monterrey, Mexico to carry out the auger drilling programme. During December 2011 and January 2012, a total of 58 holes totalling 1,076.1 m were drilled using a truck mounted CME-75 drill rig with 6 off 5/8" helical hollow drilling tools (HHD). Procedures for the drilling and sampling followed the ASTM D1452 and ASTM D6151 protocols. A total of 13 holes were drilled on Zone 1 to the north and 45 on Zones 2A and 2B to the south. See Figures 10.2.5-2 to 10.2.5-4 for drill hole location maps.

10.2.2 Logging

The samples were logged at the drill site using standard procedures. The entire sample from each drill rod (2.5 m length) was collected and riffle split to collect a 3 kg sample for assay, the remainder witness sample was stored in a rice bag and stored at the GoGold office in Parral. A geologist logged the colour and grain size for each sample, recording the data on Microsoft Excel spread sheet files. Standardised logging forms and geological legends have been developed for the Project. All holes were drilled to refusal. The underlying soil / bedrock is quite distinct from the overlying dark grey tailings material. All samples were taken by GoGold staff in a pickup truck at the end of the shift to the office and storage facility in Parral where they were stored under lock and key in a gated and fenced yard. Thereafter, the samples were packaged in rice sacks and trucked to the ActLabs preparation facility and laboratory in Zacatecas, Mexico.

10.2.3 Collar Surveys

Pre-numbered drill sites were laid out by global positioning system (GPS) working off the base maps. All drill holes were marked with permanent flat cement monuments with identification scribed into the wet cement after completion during the drill pad clean-up. All drill holes were GPS located in WGS 84 grid datum. All drill hole collars were GPS surveyed by SPM.

GoGold contracted Topografia e Ingenieria Integral (TII) to carry out a detailed site topographic survey and provide locations for the channel, trench and auger drill hole sites. Drill collar records have x, y, and z coordinates entered into the database to the nearest 0.01 m.

10.2.4 Down-Hole Surveys

No down-hole surveys were carried out for dip and deviation of the auger holes. The average depth of the auger holes is 18.5 m with the deepest hole being 49.5 m.

10.2.5 Recovery

Drilling recovery measurement was not attempted for the auger drilling. However, no samples were excessively wet and sample returns were found to be consistent throughout the programme.

Figure 10.2.5-1: Location Map of 2011 Auger Drill Hole Collars

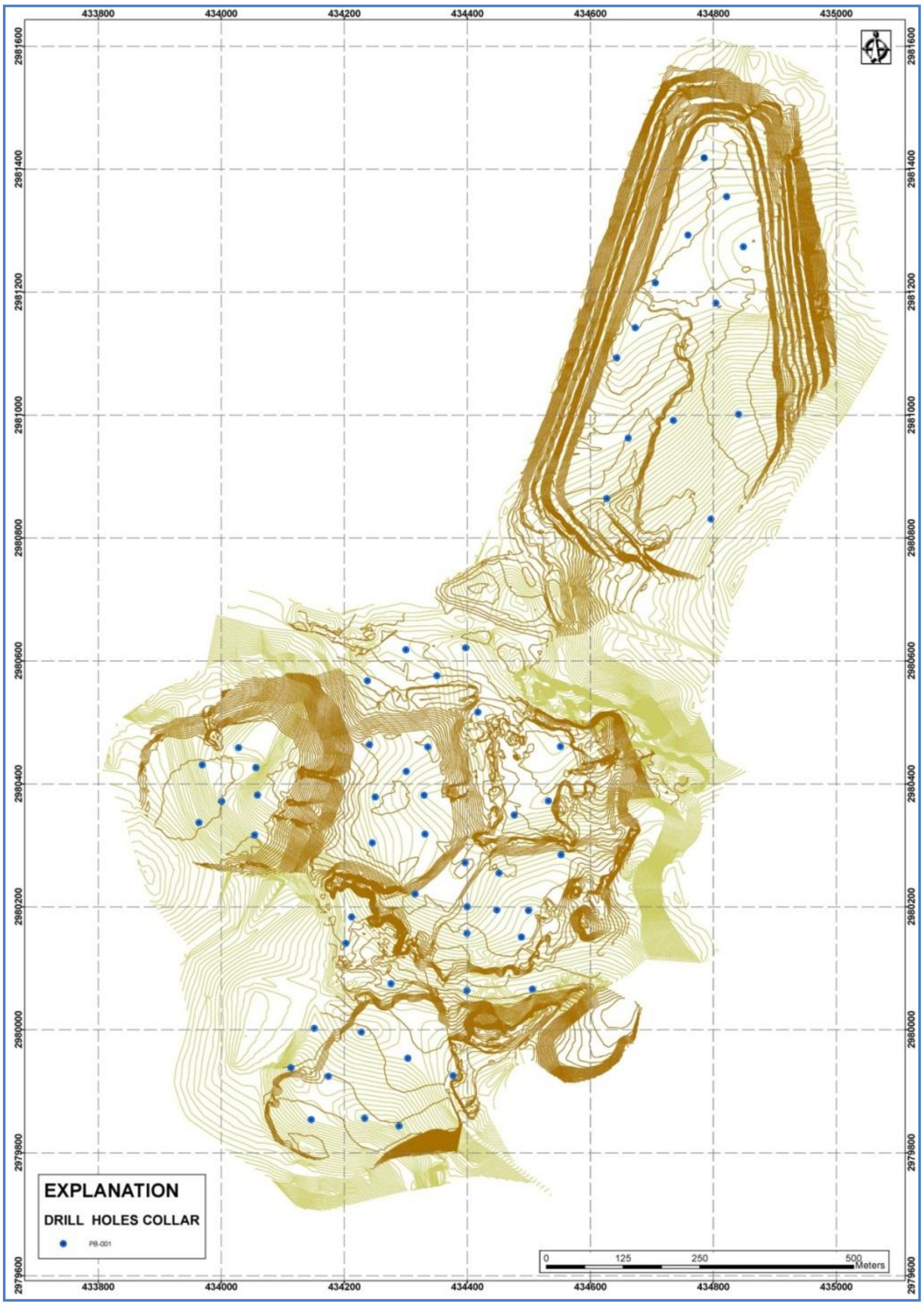


Figure 10.2.5-2: Auger Drill Hole Numbers and Locations for Zone 1

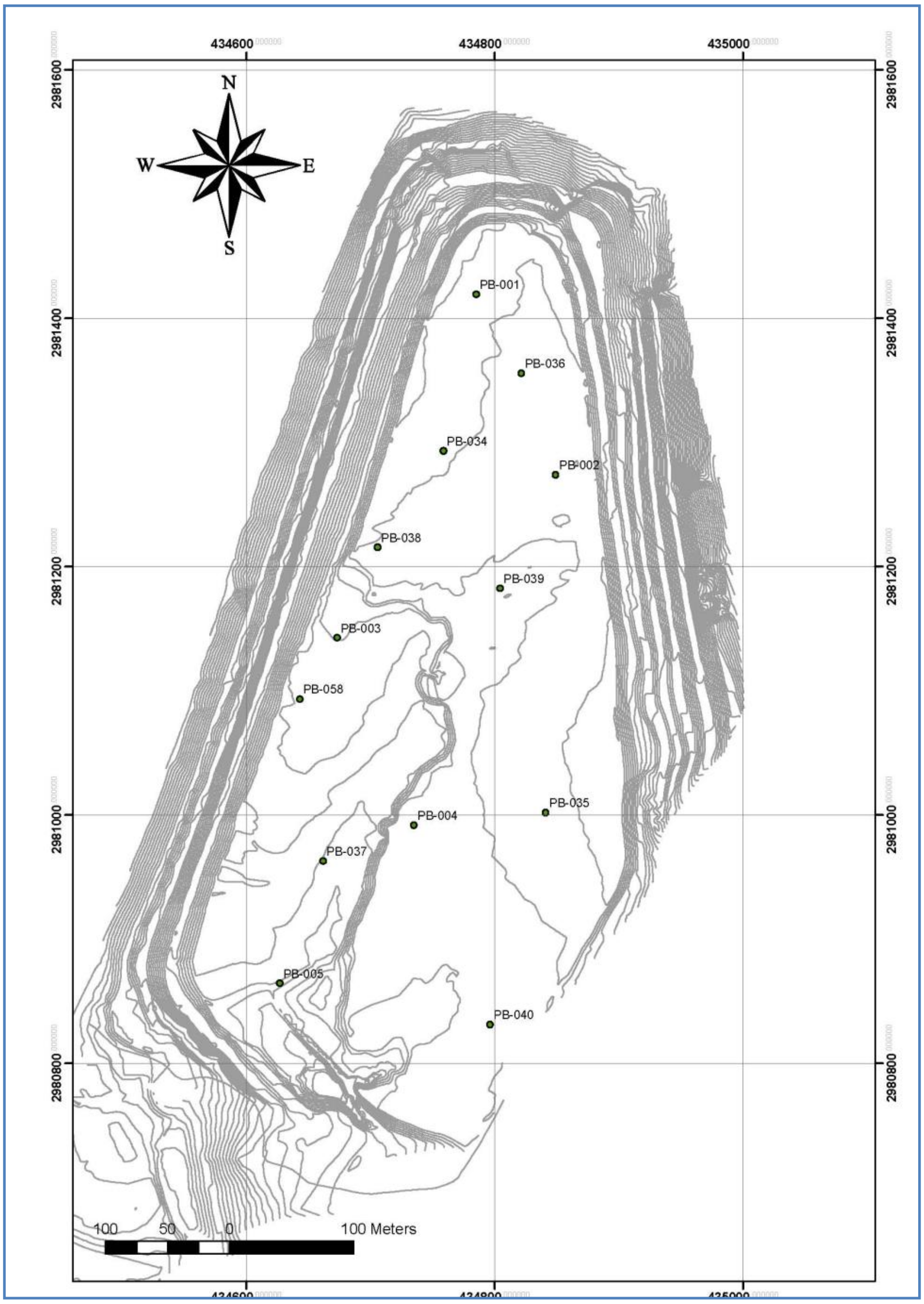


*Image supplied by SPM, April 2012

Figure 10.2.5-3: Auger Drill Hole Numbers and Locations for Zone 2

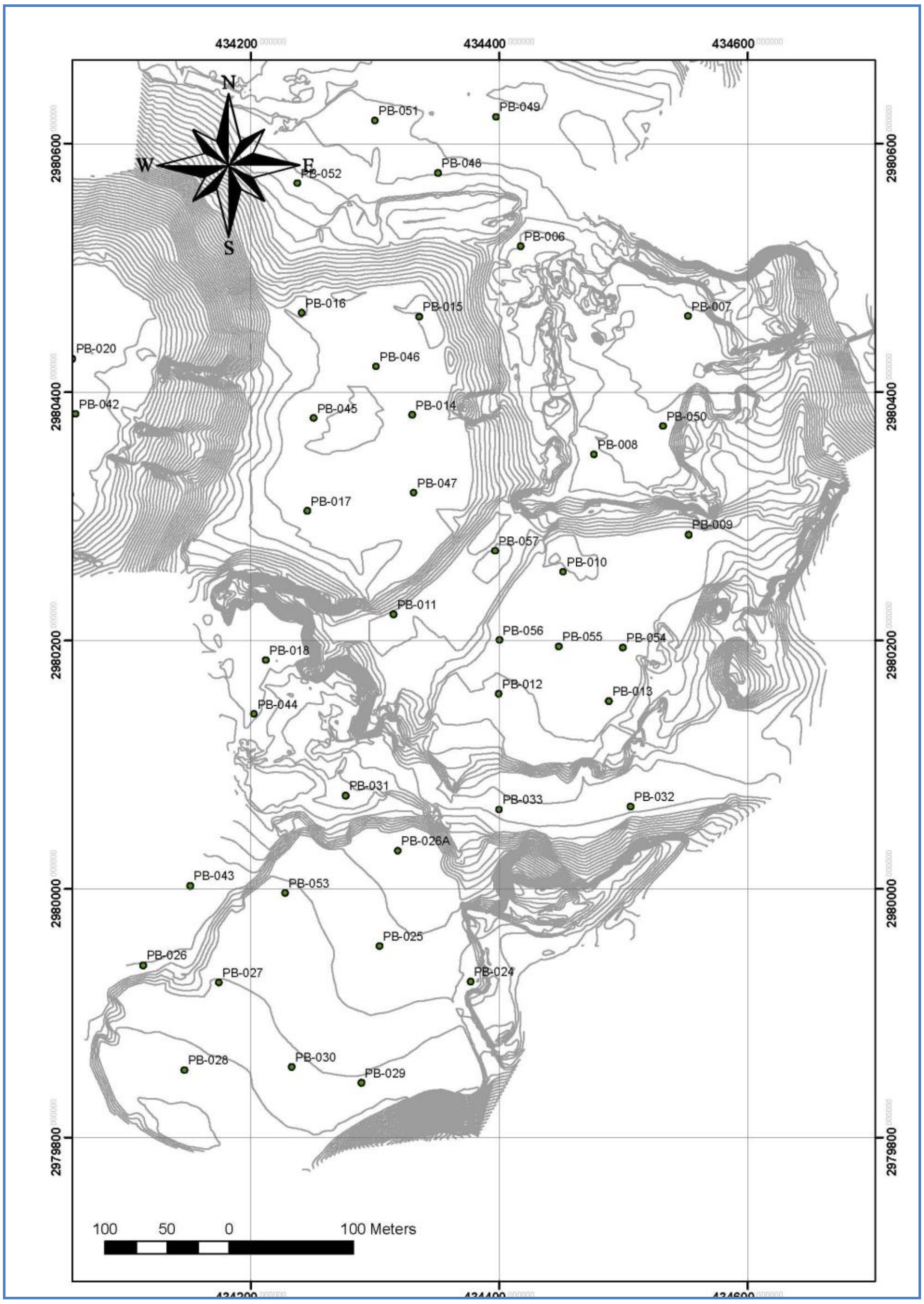
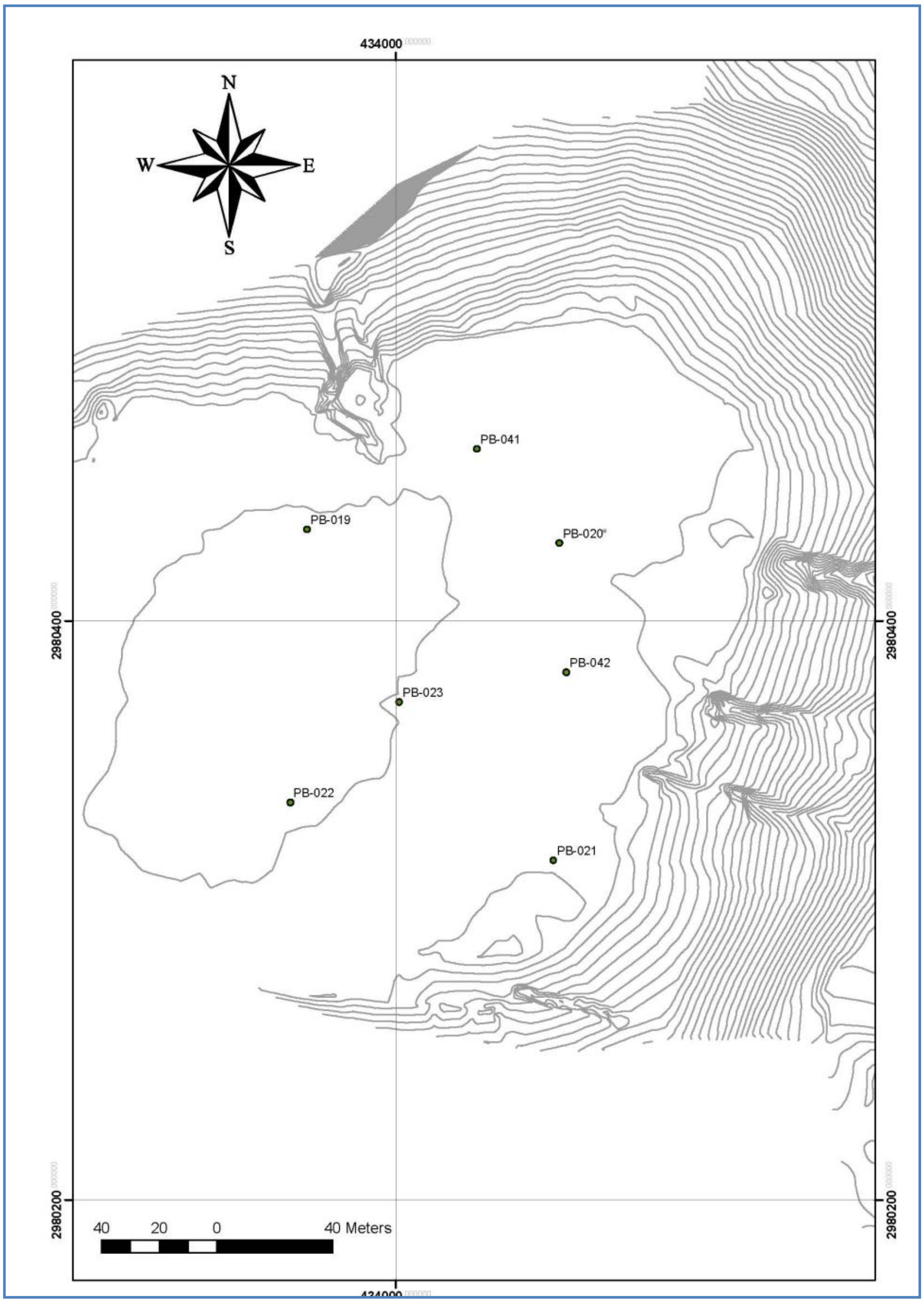


*Image supplied by SPM, April 2012

Figure 10.2.5-4: Auger Drill Hole Numbers and Locations for Zone 2 RedHill



10.2.6 Auger Drill Hole Intercepts

Table 10.2.6-1: Summary of Auger Drill Hole Intersections

Drill Hole Identification	From (m)	To (m)	Length (m)	Au (g/t)	Ag (g/t)	AuEq50 (g/t)
PB-001	0	42.5	42.5	0.325	28.0	0.885
PB-002	0	49.0	49.0	0.327	29.5	0.917
PB-003	0	42.5	42.5	0.338	26.1	0.859
PB-004	0	31.5	31.5	0.351	32.2	0.996
PB-005	0	19.5	19.5	0.308	29.9	0.906
PB-006	0	12.0	12.0	0.329	30.8	0.945
PB-007	0	12.0	12.0	0.185	35.7	0.898
PB-008	0	10.0	10.0	1.256	26.0	1.776
PB-009	0	11.0	11.0	0.452	27.8	1.008
PB-010	0	12.0	12.0	0.388	32.4	1.036
PB-011	0	12.5	12.5	0.458	36.6	1.190
PB-012	0	10.5	10.5	0.400	31.5	1.030
PB-013	0	3.5	3.5	0.385	34.0	1.065
PB-014	0	24.0	24.0	0.205	54.8	1.301
PB-015	0	17.0	17.0	0.096	52.7	1.150
PB-016	0	11.5	11.5	0.162	46.6	1.094
PB-017	0	12.8	12.8	0.202	52.2	1.246
PB-018	0	9.0	9.0	0.121	62.8	1.376
PB-019	0	22.5	22.5	0.038	52.7	1.091
PB-020	0	36.5	36.5	0.088	54.8	1.184
PB-021	0	29.5	29.5	0.092	59.4	1.280
PB-022	0	12.0	12.0	0.052	59.2	1.236

Drill Hole Identification	From (m)	To (m)	Length (m)	Au (g/t)	Ag (g/t)	AuEq50 (g/t)
PB-023	0	26.5	26.5	0.043	53.0	1.103
PB-024	0	2.5	2.5	0.349	35.0	1.049
PB-025	0	7.0	7.0	0.275	41.7	1.108
PB-026	0	17.0	17.0	0.644	48.3	1.610
PB-027	0	16.0	16.0	0.681	27.7	1.235
PB-028	0	18.0	18.0	0.278	37.4	1.025
PB-029	0	24.5	24.5	0.259	41.9	1.097
PB-030	0	23.0	23.0	0.236	39.3	1.022
PB-031	0	2.0	2.0	0.361	21.0	0.781
PB-032	0	1.5	1.5	0.159	25.0	0.659
PB-033	1	2.5	2.5	0.121	33.0	0.781
PB-034	0	47.0	47.0	0.365	34.7	1.060
PB-035	0	19.0	19.0	0.381	36.5	1.111
PB-036	0	46.0	46.0	0.341	36.1	1.062
PB-037	0	28.0	28.0	0.298	32.4	0.946
PB-038	0	46.0	46.0	0.370	28.8	0.947
PB-039	0	46.0	46.0	0.351	33.5	1.022
PB-040	0	6.0	6.0	0.376	40.7	1.190
PB-041	0	29.0	29.0	0.053	62.8	1.310
PB-042	0	40.0	40.0	0.078	59.4	1.267
PB-043	0	7.5	7.5	0.496	61.3	1.723
PB-044	0	9.0	9.0	0.233	55.3	1.338
PB-045	0	16.0	16.0	0.072	68.7	1.446
PB-046	0	17.5	17.5	0.081	59.6	1.273

Drill Hole Identification	From (m)	To (m)	Length (m)	Au (g/t)	Ag (g/t)	AuEq50 (g/t)
PB-047	0	18.5	18.5	0.173	51.3	1.198
PB-048	0	6.0	6.0	0.335	37.3	1.081
PB-049	0	10.0	10.0	0.380	31.3	1.005
PB-050	0	11.0	11.0	0.631	29.2	1.215
PB-051	0	6.0	6.0	0.450	33.3	1.116
PB-052	0	5.0	5.0	0.333	38.5	1.103
PB-053	0	2.5	2.5	0.305	39.0	1.085
PB-054	0	2.5	2.5	0.369	38.0	1.129
PB-055	0	7.5	7.5	0.442	38.0	1.202
PB-056	0	15.0	15.0	0.393	30.8	1.010
PB-057	0	12.5	12.5	0.307	46.2	1.231
PB-058	0	41.5	41.5	0.355	28.7	0.929

Figure 10.2.6-1: Location Map of the 2011 Sampling Locations

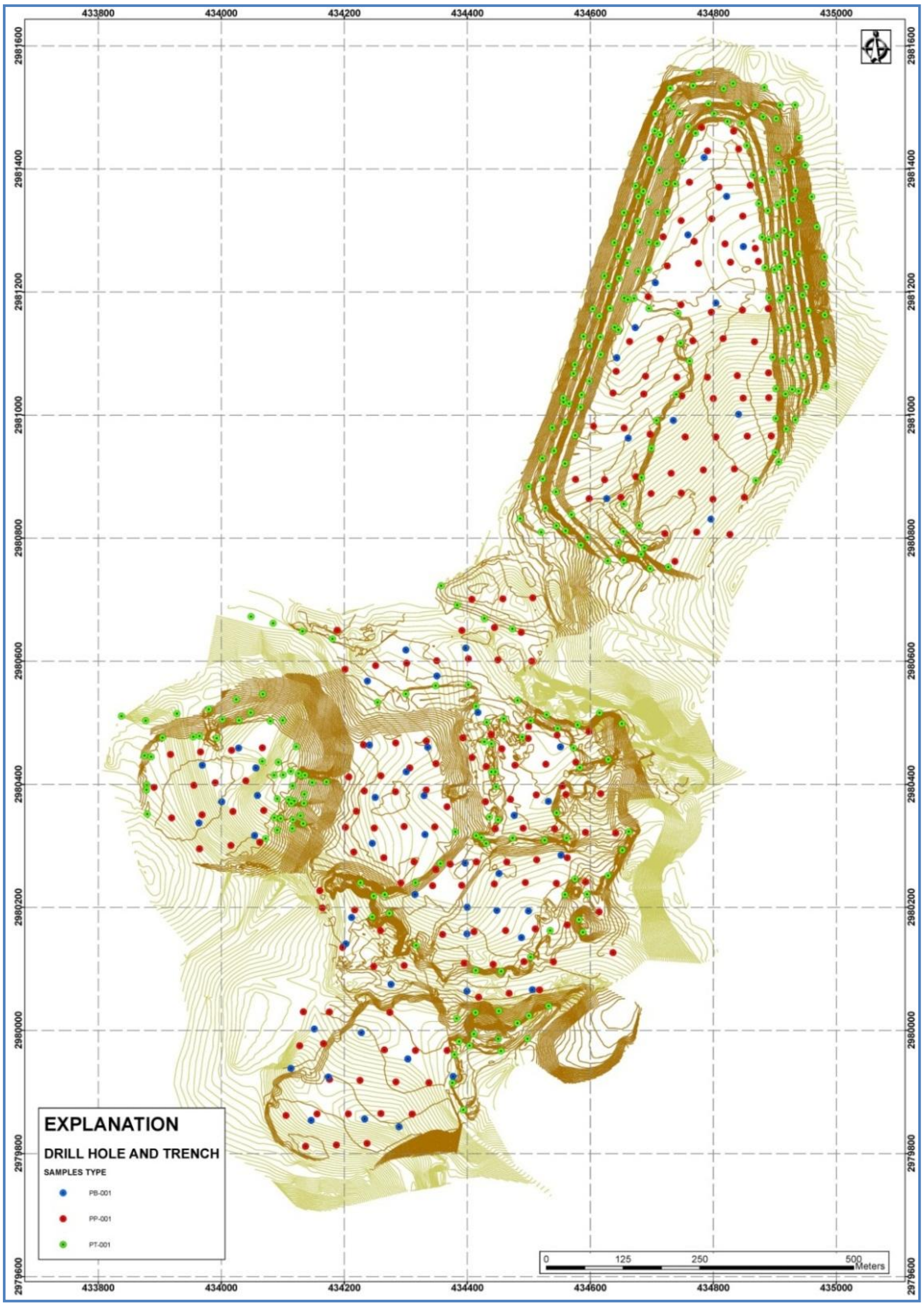


*Image supplied by SPM, April 2012

10.3 Comments on Section 10

In the opinion of the QP, the quantity and quality of the lithological, geotechnical and collar survey data collected in exploration trenching, channel sampling and drill programmes completed by GoGold are sufficient to support mineral resource estimation as follows:

- Collar surveys have been performed using industry-standard instrumentation
- Drilling is vertical and perpendicular to the tailings strata. Drill intercept widths are true thickness
- Drill orientations are generally appropriate for the mineralisation style, and have been drilled at orientations that are optimal for the orientation of mineralisation for the bulk of the deposit
- Drill hole intercepts as summarised in Table 10.2.6-1 appropriately reflect the nature of the gold and silver mineralisation
- No material factors were identified with the data collection from the drill programme that could affect mineral resource estimation.

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

From Project inception to date, Project staff employed by either GoGold or SPM were responsible for the following:

- Sample collection
- Bulk density determinations
- Sample storage
- Sample security.

11.1 Legacy Data

The QP is not aware of any legacy data.

11.2 Analytical Laboratories

The primary analytical laboratory for the GoGold programmes has been Actlabs, located in the city of Zacatecas, Mexico. Sample preparation was completed at the ISO-9001 accredited laboratory's preparation facility in Chihuahua, Mexico. Actlabs is a certified contract assay laboratory and is independent of GoGold.

11.3 Sample Preparation and Analysis

A standard sample preparation procedure was used for samples, comprising:

- Receiving: samples are logged into the laboratory's tracking system
- Drying: the entire sample is dried
- Crushing: >70% of crushed sample passes through a 2 mm screen
- Pulverising: a sample split of up to 250 g is pulverised to 85% passing 75 um.

The analytical procedure used for gold and silver is fire assay with an atomic absorption (AA) finish, using a 50 g nominal pulp sample weight.

11.4 Quality Assurance / Quality Control Programmes

A quality assurance / quality control (QA/QC) programme of blanks, duplicates and reference standards has been instituted by GoGold to monitor the integrity of the assay results.

In general, the exploration geologists inserted a single control sample (i.e. duplicates, certified reference material (CRM), or blanks every 10 drilled samples). Thus each mineralised interval, normally 20 to 40 m, typically contains 2 or 3 control samples. All CRM and blank material was obtained from CDN Resource Laboratories of Langley, Canada (CDN) and consisted of sulphide and oxide pulverised material with different certified gold and silver content values.

A total of 559 samples were assayed during GoGold's 2011 auger drilling programme. A summary of the quantities of control samples is shown in Table 11.4-1.

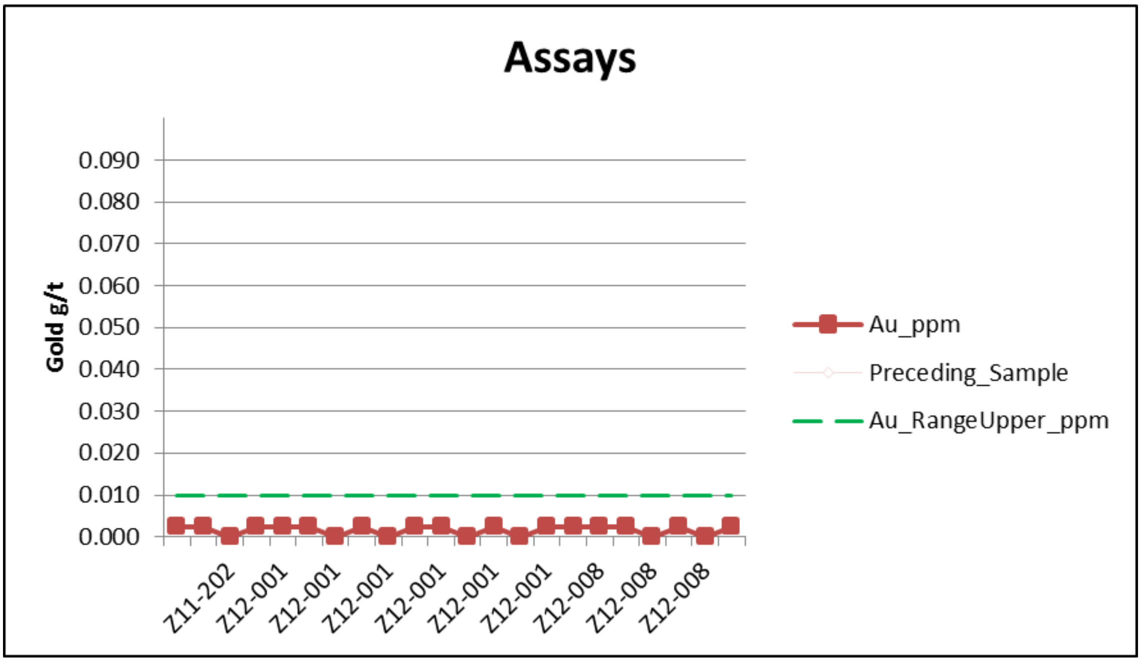
Table 11.4-1: Quantities of Control Samples Used During Auger Drilling

Sample Type	No. of Samples	Percentage (%)
Normal	464	83.0
Blanks	22	3.9
Duplicated	35	6.3
CRM Standards	38	6.8
Total	**559**	**100.0**

11.5 Blanks

Blank samples were inserted to monitor possible contamination during the preparation process and analysis of the samples in the laboratory. The blank material used was a commercial reference material purchased from CDN. Blank samples were inserted at an average rate of approximately 1 per each 20 original samples. For gold, none of the samples was over the detection limit of 0.005 g/t gold (Figure 11.5-1). These are satisfactory results.

Figure 11.5-1: Control Chart for Gold Assays from the Blank Samples



11.6 Duplicates

Duplicate samples were used to monitor (a) potential mixing up of samples and (b) variability of the data as a result of laboratory error or lack of homogeneity of the samples. A total of 35 duplicate samples were taken, representing 6.3% of the total samples. The results of the duplicate sampling are shown in Figures 11.6-1 and 11.6-2. Good correlation indices are shown for the majority of samples collected during the auger drilling programme.

Figure 11.6-1: Graph of Original versus Duplicate Sample for Gold Assays

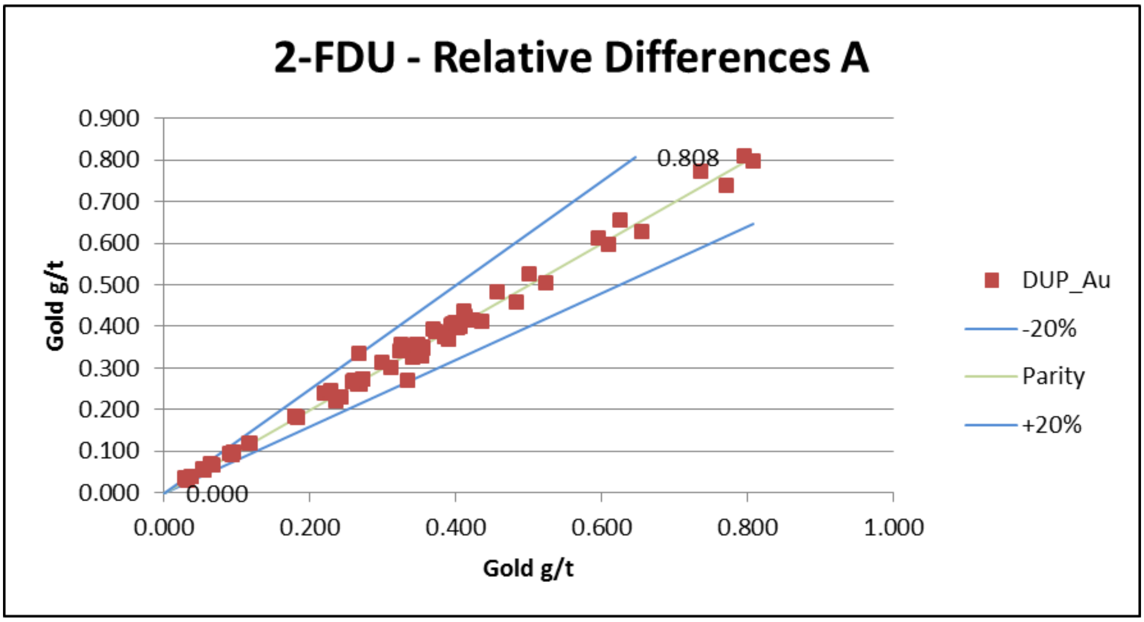
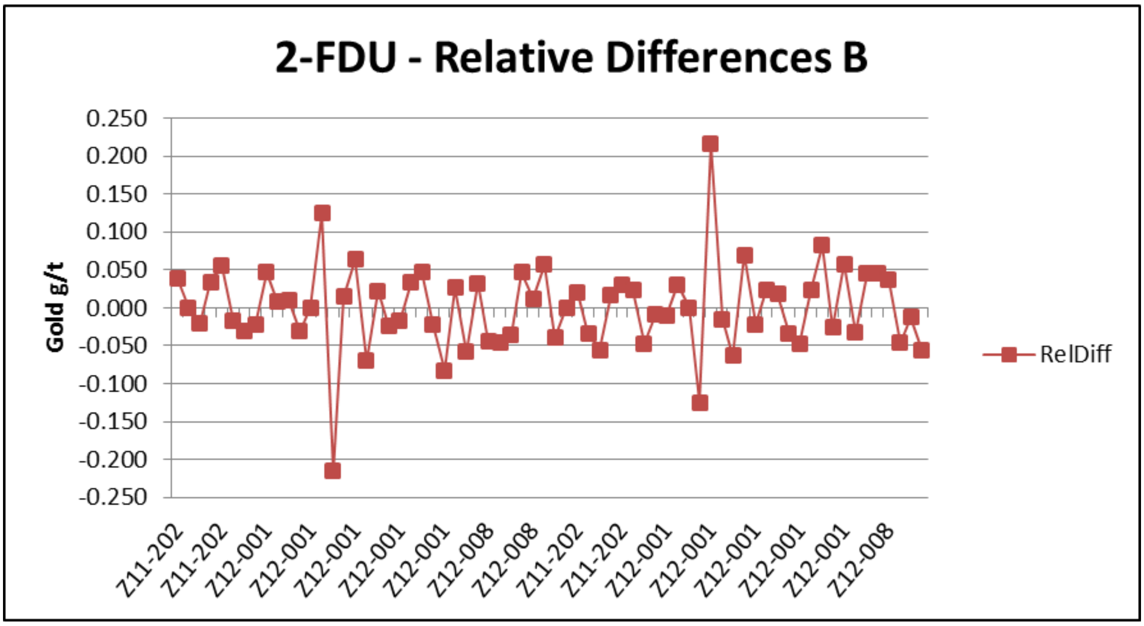


Figure 11.6-2: Graph of the Relative Differences



11.7 Certified Reference Material Samples

GoGold purchased CRM for use in evaluating the accuracy of the laboratory. The CRM standards were purchased from CDN. Each CRM standard was prepared by the vendor at its own laboratories and shipped directly to GoGold along with a certificate of analysis for each CRM standard purchased.

The CRM standards used during the 2011 drilling programme are summarised in Table 11.7-1.

Table 11.7-1: Summary of Certified Reference Material Used During Auger Drilling

CRM Sample Identification	Gold		Silver		Copper	
	Au (g/t)	2 Std. Dev.	Ag (g/t)	2 Std. Dev.	Cu (%)	2 Std. Dev.
CDN-CGS-13	0.218	0.036	-	-	0.182	0.010
CDN-GS-P4A	0.438	0.032	-	-	-	-
CDN-GS-P7E	0.766	0.086	-	-	-	-
CDN-GC-1G	1.140	0.090	-	-	-	-
CDN-HC-2	1.670	0.120	15.3	1.4	4.630	0.260
CDN-ME-15	1.386	0.102	34.0	3.7	0.014	0.001
CDN-HZ-2	0.124	0.024	61.1	4.1	1.360	0.060

For graphical analysis, results for the standards were scrutinised relative to the mean value ± 2 standard deviations from mean value. A total of 38 reference control standards were submitted at an average frequency of 1 for each batch of 15 samples (See Figures 11.7-1 to 11.7-3).

Figure 11.7-1: Control Chart for Gold Assays from CRM CDN-GS-1G

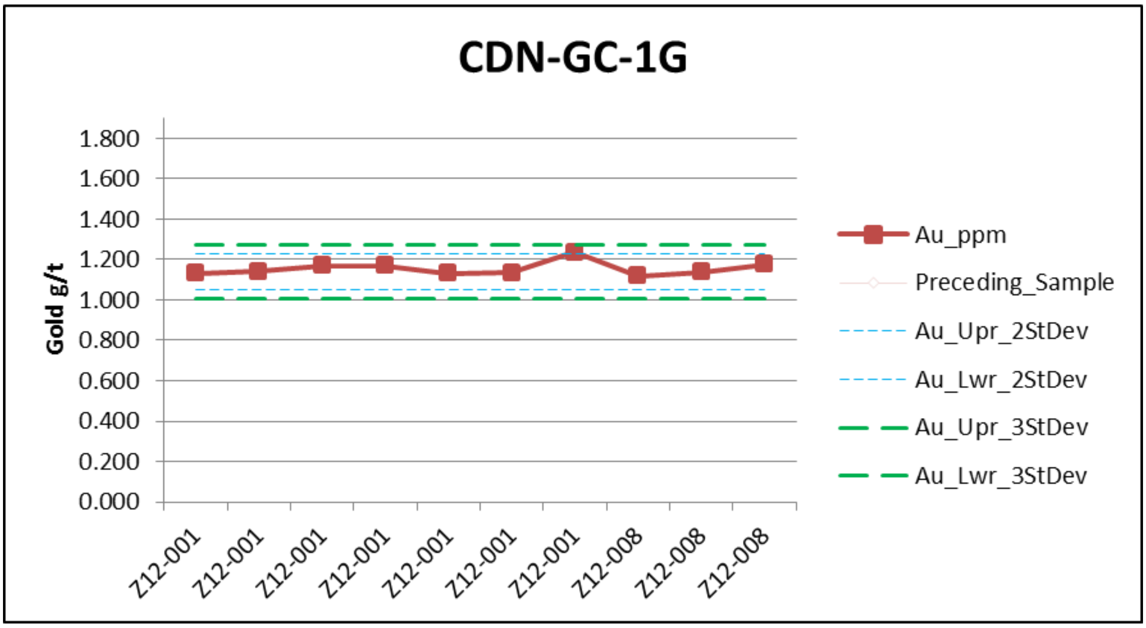


Figure 11.7-2: Control Chart for Gold Assays from CRM CDN-GS-P4A

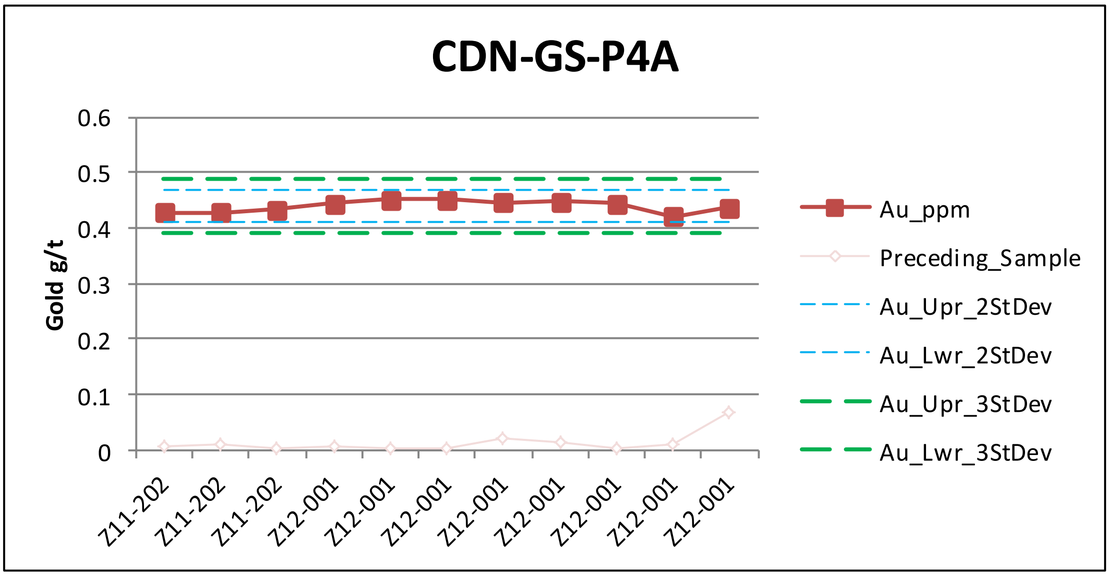
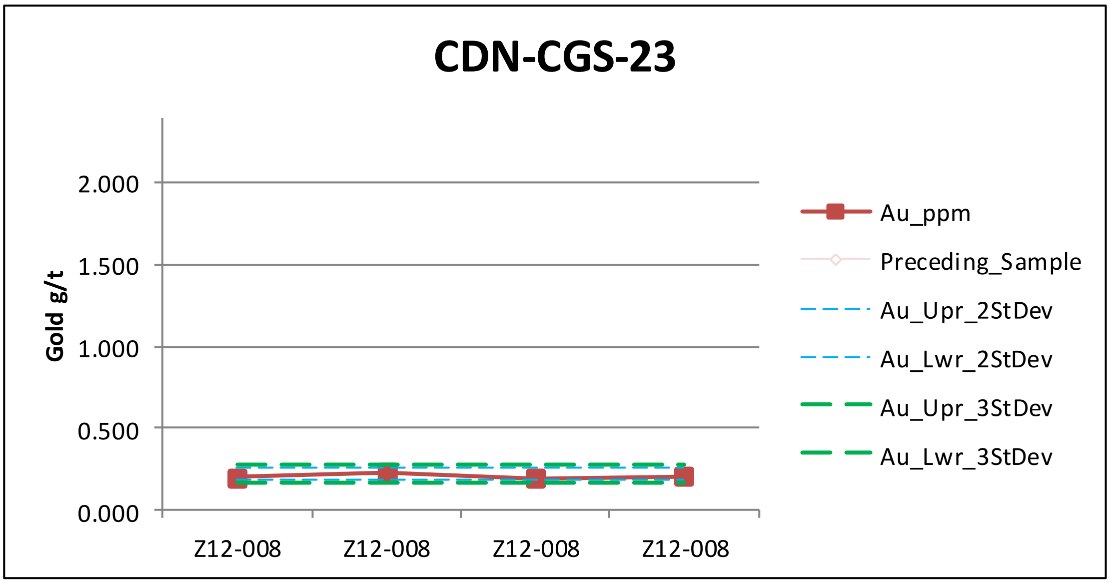


Figure 11.7-3: Control Chart for Gold Assays from CRM CDN-GS-23



11.8 Databases

The Project data is stored in a Microsoft Access database. All geological and geotechnical data for GoGold drill and sampling programmes were entered electronically into the system following paper logging in the field.

Assays for GoGold drill programmes were received electronically from the laboratory and imported directly into the database.

Drill collar survey data was manually entered into the database.

Data was verified by means of in-built programme triggers with the mining estimation software. Checks were performed on surveys, collar coordinates, lithology data and assay data.

Paper records have been kept for all assay and QA/QC data, geological logging and bulk density information and collar coordinate surveys.

11.9 Sample Security

Sample security relied upon the fact that the samples were always attended or locked at the GoGold office and storage facility in Parral. Sample collection and transportation has always been undertaken by company or laboratory personnel using corporately-owned vehicles.

Channel, trench and drill samples were prepared to a pulp at Actlabs, and pulps were transported by laboratory personnel to Actlabs' analytical facility in Zacatecas.

Chain of custody procedures consisted of filling out sample submittal forms sent to the laboratory with sample shipments to make certain that all samples were received by the laboratory.

11.10 Sample Storage

Witness samples are stored at the GoGold office and warehouse facility in Parral.

11.11 Comments on Section 11

The QP is of the opinion that the quality of the gold and silver analytical data are sufficiently reliable to support a mineral resource estimation and that sample preparation, analysis, and security are generally performed in accordance with exploration best practices and industry standards as follows:

- Sample preparation for samples that support mineral resource estimation has followed a similar procedure for all GoGold drill/channel/trench programmes. The preparation is in line with industry-standard methods
- Exploration and fill in drill, channel and trench samples were analysed by independent laboratories using industry standard methods for gold and silver analysis/assay
- Typically, drill programmes included insertion of blank, duplicate and standard reference material samples. QA/QC submission rates meet industry-accepted

standards of insertion rates. The QA/QC programme results do not indicate any problems with the analytical programmes, therefore the gold and silver analyses from the drill, channel and trench programmes are suitable for mineral resource estimation

- Data that were collected were subject to validation, using in-built programme triggers that automatically checked data on upload to the database
- Verification is performed on all digitally-collected data on upload to the main database, and includes checks on surveys, collar co-ordinates, lithology data, and assay data. The checks are appropriate, and consistent with industry standards
- Sample security has relied upon the fact that samples were always attended or locked in the GoGold office facility. Chain-of-custody procedures consist of filling out sample submittal forms that are sent to the laboratory with sample shipments to make certain that all samples are received by the laboratory
- Current sample storage procedures and storage areas are consistent with industry standards.

12 DATA VERIFICATION

DRDAL carried out its data verification by undertaking a site visit to the Project in March 2012 during which time GoGold's trenching and drilling programmes, logging/sampling procedures, QA/QC protocols, bulk density, block model and resource estimations were reviewed. In addition, the site visits also provided the opportunity to assess the depositional history and geological continuity of the Parral Tailings deposit from surface exposures and trenches.

12.1 DRDAL Site Visit to the Parral Property, March 2012

DRDAL and a QP as defined by NI 43-101, visited the Parral Project from 8 to 10 March 2012.

Half a day was spent touring the Parral Tailings Property examining the tailings deposits and verifying auger drill hole, trench and channel sample locations. The remainder of the day concentrated on reviewing assay certificates, collar coordinates and the codes used for wireframe construction. These were examined for errors and consistency. The MineSight model, auger drill hole database and QA/QC data were reviewed.

The second day was spent visiting with the City of Parral Town Officials reviewing the Option Agreement, water rights and detailed digital elevation and topographic information. The field office and sample storage facility in Parral was visited and the CRM standard materials were observed. Time was spent observing OESTEC collect Proctor bulk density measurements in the field using a nuclear gauge. The final morning was spent in the field with OESTEC collecting Shelby Tube samples for bulk density measurements and the suite of QP check samples.

12.2 Drill Collars

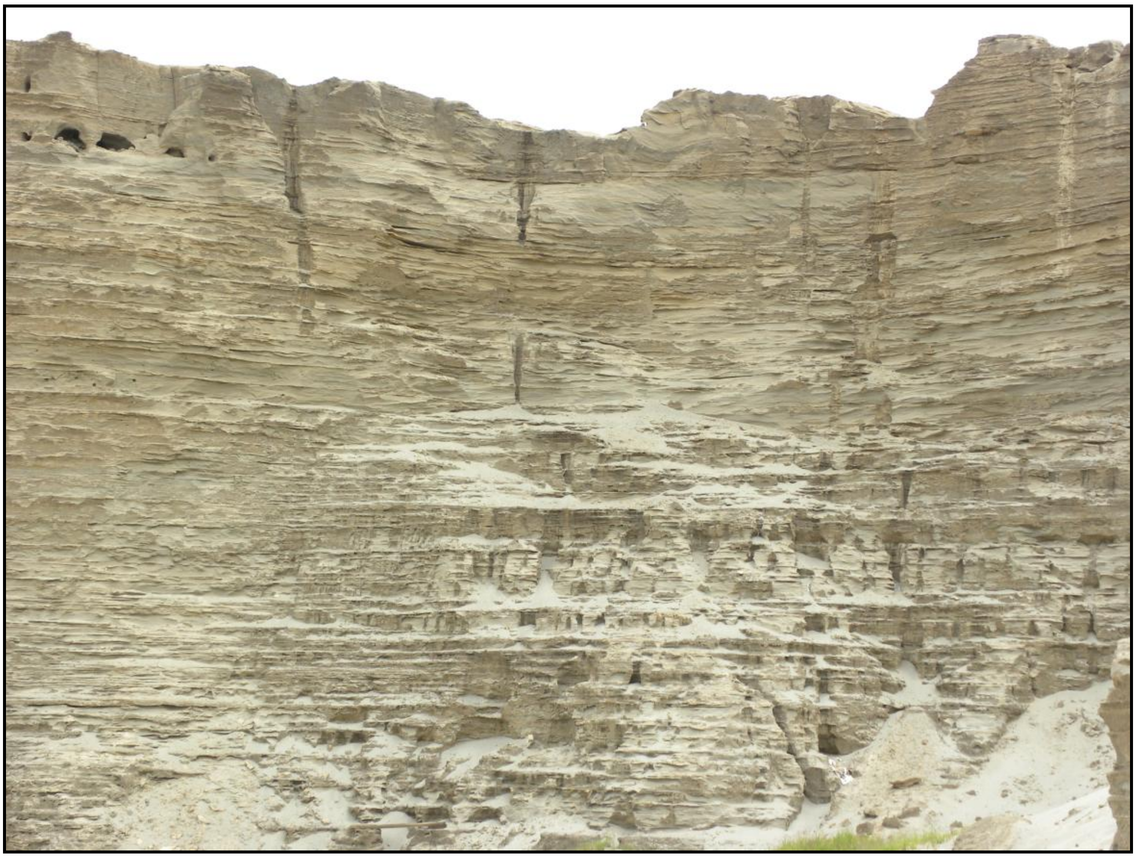
In January 2012, GoGold contracted TII to carry out a detailed site topographic survey and provide locations for the channel, trench and auger drill hole sites. Drill collar records have x, y, and z coordinates entered in the database to the nearest 0.01 m. Concrete monuments have been placed over each auger hole. See Figure 12.2-1.

Figure 12.2-1: Location Monument for Auger Drill Hole PB-033

12.3 Trench and Channel Sample Locations

Channel sample and trench locations were surveyed by TII and x, y, and z coordinates were entered into the database. The trenches were backfilled shortly after all sampling/mapping was completed. Pickets were place to mark each trench location. The channel sample locations were visible on the slopes and faces of the tailings. See Figure 12.3-1.

Figure 12.3-1: Tailings Channel Sampling



12.4 Sample Storage

GoGold rents an office in the town of Parral. The yard is fenced and the gate locked. Witness samples, pulp rejects and other materials are stored at this facility.

12.5 Bulk Density Test

The QP observed the personnel from OESTEC collect both the nuclear gauge test results and the Shelby Tube samples for the bulk density determinations.

12.6 DRDAL Visit to KCA, March 2012.

DRDAL visited the KCA offices in Reno, Nevada on 12 March 2012 to review the results of the metallurgical test work completed by KCA on the Parral tailings.

12.7 Qualified Person Check Samples

Once OESTEC completed the bulk density measurements on the 16 Shelby Tube samples, OESTEC delivered the samples to the ALS Chemex de México S.A. de C.V. (ALS) laboratory in Hermosillo, Mexico. The QP gave ALS instructions to dry, homogenise, split and send a pulp for assay/analysis to ALS Chemex Labs Limited in Vancouver, Canada.

The author instructed the laboratory to conduct analyses utilising inductively coupled plasma (ICP) mass spectometerty methods, with follow-up wet chemistry of samples that exceeded ICP detection limits. The author also requested gold and silver fire assay as well as fluorine assay. The assay/analysis methodology directed by the author and utilised at ALS is a recognised industry-standard exploration chemistry/fire assay procedure.

The author requested ALS to carry out the following assay/analytical work on the samples:

- Gold Fire Assay using Code Au-AA24
- Silver Fire Assay using Code Ag-AA46
- ICP Multi-Element using Code ME-MS41
- Fluorine Assay using Code F-ELE82.

The results are reported in Table 12.7-1.

The check samples confirm the average grades of the tailings material:

- Gold average 0.273 g/t, ranges from 0.028 to 0.540 g/t
- Silver averages 43.8 g/t, ranges from 15.0 to 86.0 g/t
- Copper averages 478 ppm, ranges from 110 to 812 ppm
- Lead averages 4,989 ppm, ranges from 2,370 to 9,590 ppm
- Zinc averages 10,100 ppm, ranges from 2410 to 25,300 ppm
- Fluorine averages 6.94%, ranges from 3.86 to 15.95%.

Table 12.7-1: Assay Results for QP Check Samples

ALS CHEMEX	WEI-21	Au-AA24	Ag-AA46	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
SAMPLE	Recvd Wt.	Au	Ag	Ag	Al	As	Au	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga	Ge	Hf	Hg	In	K	La	Li	Mg
DESCRIPTION	kg	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%
PCA-11(0.60-0.75)	0.64	0.540	28	29.3	2.02	730	0.5	520	180	0.76	14.55	11.75	125.5	17.2	23.3	5	2.79	620	2.58	6.27	0.17	0.20	0.13	0.035	1.88	8.2	14.1	0.23
PCA-12(2.20-2.35)	0.60	0.131	62	60.5	3.84	309	<0.2	300	210	2.34	0.97	5.73	77.1	48.7	13.3	11	6.61	387	4.00	14.75	0.20	0.47	0.33	0.061	3.15	23.7	26.5	0.45
PCA-13(2.50-2.65)	0.62	0.357	37	40.7	2.16	1045	0.4	380	90	1.33	24.8	9.05	104.0	20.0	16.8	8	3.53	808	3.25	7.42	0.24	0.29	0.17	0.117	1.89	9.3	13.1	0.25
PCA-14(0.60-0.75)	0.71	0.378	39	39.7	2.31	1130	0.3	560	130	1.10	10.5	10.95	139.5	19.3	20.2	7	3.45	626	3.21	8.23	0.20	0.23	0.19	0.079	2.04	9.4	16.6	0.28
PCA-15(2.70-2.85)	0.58	0.028	86	84.6	3.02	294	<0.2	40	1170	3.78	0.28	8.09	18.75	31.5	5.3	6	5.13	149	2.73	9.18	0.36	0.36	0.35	0.030	3.05	14.8	13.5	0.18
PCA-16(2.50-2.65)	0.60	0.018	67	65.4	3.23	165	<0.2	20	2340	3.72	0.25	6.03	15.2	36.9	6.1	12	6.17	153	3.04	12.1	0.39	0.40	0.29	0.032	3.14	18.1	16.0	0.22
PCA-17(2.60-275)	0.57	0.028	72	66.6	3.41	217	<0.2	100	1430	4.93	0.38	9.20	18.8	37.1	5.7	11	7.56	207	2.90	12.45	0.45	0.35	0.33	0.034	3.24	18.2	18.9	0.26
PCA-18(2.0-2.15)	0.61	0.352	24	22.6	1.82	837	0.3	810	330	0.81	27.5	10.30	35.2	16.1	8.5	4	2.99	587	2.05	5.13	0.23	0.23	0.08	0.051	1.63	7.9	13.1	0.21
PCA-19(2.50-2.65)	0.69	0.414	36	35.2	2.02	1050	0.4	560	180	0.96	21.2	8.92	94.4	18.5	17.0	7	3.05	690	2.74	6.73	0.20	0.23	0.17	0.057	1.83	8.6	14.7	0.24
PCA-20(2.40-2.55)	0.78	0.409	21	20.1	1.6	453	0.5	20	260	0.51	3.69	16.40	156.5	12.7	24.8	3	2.24	406	2.12	5.40	0.15	0.11	0.06	0.014	1.55	6.1	10.5	0.14
PCA-21(2.60-2.75)	0.59	0.012	81	71.6	3.26	148	<0.2	20	3260	3.97	0.19	7.36	13.1	36.2	6.1	6	9.20	110	2.90	11.7	0.35	0.58	0.58	0.027	3.34	17.9	13.7	0.20
PCA-22(2.40-2.55)	0.73	0.391	49	45.6	1.33	174	0.3	3050	200	0.55	2.46	8.80	80.4	13.8	8.8	3	1.79	337	1.65	4.04	0.16	0.21	0.11	0.010	1.35	6.4	9.6	0.17
PCA-23(2.70-2.85)	0.66	0.202	29	29.3	1.72	615	0.2	850	240	0.94	46.6	10.10	26.2	16.6	12.5	4	2.72	812	2.31	4.69	0.26	0.23	0.09	0.027	1.55	8.3	11.2	0.20
PCA-24(0.60-0.75)	0.53	0.411	21	20.0	1.79	813	0.3	890	250	0.76	16.9	10.25	25.8	15.0	9.9	5	2.54	433	2.27	4.76	0.20	0.23	0.08	0.037	1.64	7.4	10.0	0.18
PCA-25(3.50-3.25)	0.62	0.288	15	13.0	1.62	1340	0.2	1130	510	0.87	25.9	12.25	28.2	14.1	13.2	3	2.54	557	1.72	4.12	0.20	0.17	0.05	0.046	1.47	6.9	9.3	0.15
PCA-26(2.40-2.55)	0.64	0.407	33	31.4	1.9	1180	0.3	720	110	1.05	22.4	6.60	67.2	19.2	15.2	6	2.87	764	3.08	6.08	0.27	0.29	0.15	0.102	1.56	9.3	16.1	0.30
Average Value	0.636	0.273	43.8	42.2	2.32	656	0.34	623	681	1.77	13.7	9.49	64.1	23.3	12.9	6	4.07	478	2.66	7.69	0.25	0.29	0.20	0.047	2.14	11.3	14.2	0.23

	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	Zn-OG46	ME-MS41	F-ELE82
	Mn	Mo	Na	Nb	Ni	P	Pb	Rb	Re	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V	W	Y	Zn	Zn	Zr	F
	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	%
PCA-11(0.60-0.75)	1780	23.8	0.09	0.59	5.0	420	8440	105	<0.001	1.48	37.4	2.4	13	0.9	120	<0.01	0.03	1.2	0.027	2.29	0.99	51	28.4	9.24	>10000	2.53	5.2	8.56
PCA-12(2.20-2.35)	2970	6.4	0.17	0.94	8.4	890	4890	200	0.001	1.2	76.9	5.1	3.6	1.2	120.5	<0.01	0.03	3.3	0.037	4.47	1.48	93	63.8	22.60	9410	0.941	15.3	4.26
PCA-13(2.50-2.65)	2170	11.4	0.10	0.88	6.3	400	6520	115	0.002	2.15	60.5	2.7	17	1.2	231	<0.01	0.16	1.9	0.036	2.34	1.07	57	46.8	10.20	>10000	1.55	7.7	5.79
PCA-14(0.60-0.75)	2690	20.2	0.10	0.63	5.5	450	9590	116	0.002	1.88	68.8	2.6	13.6	1.3	136	<0.01	0.08	1.5	0.027	2.84	1.21	65	29.9	10.55	>10000	2.17	6.3	6.96
PCA-15(2.70-2.85)	3300	5.0	0.12	0.86	4.5	610	2790	186	0.002	0.31	108.5	3.5	1.7	0.7	137.5	<0.01	0.03	2.2	0.024	3.70	1.43	65	114.5	19.65	3110	0.311	11.1	6.52
PCA-16(2.50-2.65)	2910	4.2	0.12	0.89	7.2	670	2800	198	0.001	0.18	115	4.0	1.3	1.0	158.5	<0.01	0.03	2.5	0.029	3.88	1.81	83	104.0	18.35	2810	0.281	12.6	5.33
PCA-17(2.60-275)	3180	4.9	0.12	0.77	6.3	650	3860	201	0.002	0.27	147	4.3	3.2	1.0	138	<0.01	0.03	2.3	0.025	4.07	1.92	76	102.5	20.80	4200	0.42	10.6	8.17
PCA-18(2.0-2.15)	1160	11.3	0.12	0.90	5.8	330	4040	98	0.003	1.04	22.1	2.5	17	1.0	126.5	<0.01	0.13	2.2	0.038	1.82	0.89	36	39.8	8.66	5100	0.51	5.6	6.83
PCA-19(2.50-2.65)	1880	15.8	0.10	0.78	5.8	400	6580	109	0.001	1.46	49.7	2.5	16	1.1	127.5	<0.01	0.09	1.7	0.032	2.35	1.02	49	36.0	9.57	>10000	1.445	6.5	5.73
PCA-20(2.40-2.55)	1520	27.9	0.06	0.34	4.3	300	8870	93	0.001	1.55	34.3	2.3	8.5	0.5	119.5	0.02	0.01	0.6	0.014	2.04	0.92	35	21.2	8.18	>10000	2.37	3.4	15.95
PCA-21(2.60-2.75)	3970	2.1	0.14	1.20	7.3	630	2370	204	0.001	0.17	108.5	3.9	1.2	0.8	128.5	<0.01	0.01	3.0	0.034	3.81	1.99	79	112.5	22.50	2410	0.24	20.2	6.34
PCA-22(2.40-2.55)	1350	7.4	0.07	0.69	2.0	390	3280	77	0.003	1.4	42.2	1.7	5.4	0.5	90.1	<0.01	<0.01	1.1	0.033	1.89	0.48	29	8.57	7.08	9680	0.968	5.2	4.70
PCA-23(2.70-2.85)	1190	12.1	0.13	0.99	6.0	320	3260	94	0.001	1.31	19.5	2.4	16.1	0.8	119.5	<0.01	0.10	2.4	0.042	1.70	0.81	32	74.0	9.17	5300	0.53	6.1	6.86
PCA-24(0.60-0.75)	1240	11.2	0.15	0.84	4.6	320	3550	93	0.001	1.16	22.9	2.2	7.5	0.8	126.5	<0.01	0.08	2.0	0.038	1.87	0.79	37	41.4	8.58	4820	0.482	6.0	6.44
PCA-25(3.50-3.25)	1080	13.9	0.15	0.78	4.2	280	3400	90	0.001	0.81	16.1	2.1	18.3	0.6	130.5	0.01	0.19	2.2	0.034	1.52	1.05	25	33.7	8.23	4580	0.458	4.1	8.77
PCA-26(2.40-2.55)	1860	12.4	0.10	1.04	6.1	440	5580	96	0.002	1.9	37.9	2.8	17.1	1.0	126	<0.01	0.11	2.1	0.051	1.85	1.00	51	37.5	9.73	9750	0.975	7.2	3.86
Average Value	2141	11.8	0.12	0.82	5.6	469	4989	130	0.002	1.14	60.5	2.9	10.0	0.9	133.5	0.02	0.07	2.0	0.033	2.65	1.18	54	55.9	12.69	5561	1.01	8.3	6.94

12.8 Comments on Section 12

DRDAL considers that a reasonable level of verification has been completed and that no material issues would have been left unidentified from the programmes undertaken.

The QP has reviewed the appropriate records and is of the opinion that the data verification programmes undertaken on the data collected from the Project adequately support the geological interpretations, the analytical and database quality and therefore support the use of the data in mineral resource estimation:

- No material sample biases were identified from the QA/QC programmes; and,

Sample data collected adequately reflect the deposit dimensions and thickness of the tailings.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Sample Receipt and Preparation

On 21 February 2012, the laboratory facility of KCA in Reno, Nevada received 2 pallets containing 50 off 5 gallon buckets of bulk material from the Jales La Prieta Project site in Mexico. Each bucket contained dry to damp nominal 1.7 mm tailings material and was numbered and labelled by GoGold with zone identification
(CM-PJ-001, CM-PJ-002 and CM-PJ-003). Upon receipt, the individual buckets were grouped by number and zone identification labelling provided by the client. Material with similar labelling was combined, producing a total of 25 individual received samples. Each of the received samples were weighed and assigned a unique sample number (KCA Sample Nos. 63636 A-H, 63637 A-I and 63638 A-H).

The received samples were then combined by zone and assigned a unique sample number (KCA Sample Nos. 63636, 63637 and 63638). The 3 combined samples were utilised for head analyses, head screen analyses with assays by size fraction, bottle roll leach testing, agglomeration testing, compacted permeability testing and column leach testing.

13.2 Head Analyses

Head analyses were completed on each sample. Portions of the head material were assayed for gold and silver content. A portion of each sample was also assayed semi-quantitatively by means of inductively coupled plasma optical emission spectroscopy (ICP-OES) for an additional series of elements and for whole rock constituents. In addition to these semi-quantitative analyses, each sample was assayed by quantitative methods for carbon, sulphur and mercury. Cyanide soluble analyses were performed on a portion of each sample. A portion of material from each sample was also utilised for head screen analyses with assays by size fraction for gold and silver. The results of the head analyses are summarised in Table 13.2-1.

Table 13.2-1: Summary of Head Analyses – Gold and Silver

KCA Sample No.	Description	Average Assay (g/t Au)	Average Assay (g/t Ag)	Weighted Ave. Head Assay (g/t Au)	Weighted Ave. Head Assay (g/t Ag)
63636	CM-PJ-001	0.357	32.81	0.376	42.76
63637	CM-PJ-002	0.348	50.91	0.363	61.37
63638	CM-PJ-003	0.099	91.85	0.090	91.82

13.3 Bottle Roll Leach Test Work

Cyanide bottle roll tests were completed on a pulverised portion of each sample. The leach tests were run for a period of 96 hours with solution sampling performed at 2, 4, 8, 24, 48, 72 and 96 hours. The tests utilised 1,000 g of pulverised material (80% passing 0.075 mm) slurried with 1,500 mm of tap water. Sodium cyanide was added and maintained at 1 g/l of solution. The pH of the solution was maintained at 11.0 with the addition of hydrated lime. The results of the cyanide bottle roll leach tests are summarized in Tables 13.3-1 and 13.3-2.

Table 13.3-1: Summary of Bottle Roll Leach Tests - Gold

KCA Sample No.	Description	Calculated Head (g/t Au)	Gold Extract. (%)	Leach Time (h)	Cons. NaCn (kg/t)	Addition $Ca(OH)_2$ (kg/t)
64068 A	CM-PJ-001	0.338	66	96	3.50	4.00
64068 B	CM-PJ-002	0.447	72	96	3.82	3.00
63690 A	CM-PJ-003	0.035	0	96	1.36	1.50

Table 13.3-2: Summary of Bottle Roll Leach Tests - Silver

KCA Sample No.	Description	Calculated Head (g/t Ag)	Silver Extract. (%)	Leach Time (h)	Cons. NaCn (kg/t)	Addition $Ca(OH)_2$ (kg/t)
64068 A	CM-PJ-001	29.32	81	96	3.50	4.00
64068 B	CM-PJ-002	49.81	70	96	3.82	3.00
63690 A	CM-PJ-003	96.76	51	96	1.36	1.50

13.4 Agglomeration and Compaction Test Work

Agglomeration tests were conducted utilising 2 kg portions of as-received material from each sample. In total, 6 separate agglomeration tests were performed on each sample for a sum of 18 tests. Each sample was tested using 0, 5, 10, 15, 20 and 25 kg of cement per tonne of material. The percolation tests were conducted in small (75 mm inside diameter) columns at a range of cement levels with no compressive load applied.

Compacted permeability test work was completed on portions of the head material for each of the samples.

The purpose of the test work completed was to examine the permeability of each sample under compaction loading to equivalent heap heights of 8, 12, 16 and 20 m of overall heap height.

The complete results of the agglomeration test work and the compacted permeability test work, including a pass/fail analysis of the information are presented in the KCA metallurgical testwork report[2].

13.5 Column Leach Test Work

Column leach tests were conducted utilising as-received material. Test material was leached for varying periods of time and sodium cyanide solution concentrations. Tailings material from 3 of these columns was utilised for acid-base accounting (ABA).

A total of 6 column leach tests were performed on each sample. The first 4 tests utilised various cyanide concentrations (1, 2, 3 or 5 g/l). A 5th test was run on a 100 kg portion of sample material and utilised a cyanide concentration of 2 g/l and 30 kg of cement per tonne of material. The 6th test was run on a 40 kg portion of sample material and utilised a cyanide concentration of 2 g/l and 12 kg of cement per tonne of material.

The results of the column leach test work are summarised in Tables 13.5-1 and 13.5-2.

Table 13.5-1: Summary of Column Leach Tests - Gold

KCA Sample No.	KCA Test No.	Description	Crush Size (mm)	Calculated Head (g/t Au)	Gold Extract. (%)	Calc. Tail Size (P_{80} mm)	No. Leach Days	Cons. NaCn (kg/t)	Addition Cement (kg/t)	Target NaCN (g/l)
63636	64033	CM-PJ-001	As rec'd	0.373	71	0.125	111	5.75	10.14	1.0
63636	64035	CM-PJ-001	As rec'd	0.388	70	0.127	111	8.73	10.14	2.0
63636	64037	CM-PJ-001	As rec'd	0.358	75	0.119	166	12.37	10.02	3.0
63636	64039	CM-PJ-001	As rec'd	0.369	73	0.121	166	12.51	10.00	5.0
63636	64137	CM-PJ-001	As rec'd	0.352	69	-	134	3.89	28.63	2.0
63636	65201	CM-PJ-001	As rec'd	0.341	65	0.135	95	3.97	11.78	2.0
63637	64041	CM-PJ-002	As rec'd	0.377	67	0.131	111	6.36	10.13	1.0
63637	64043	CM-PJ-002	As rec'd	0.336	64	0.124	111	8.71	10.22	2.0
63637	64045	CM-PJ-002	As rec'd	0.356	66	0.136	166	11.20	10.00	3.0
63637	64047	CM-PJ-002	As rec'd	0.332	67	0.133	166	14.86	10.00	5.0
63637	64140	CM-PJ-002	As rec'd	0.326	65	-	134	2.65	27.32	2.0
63637	65204	CM-PJ-002	As rec'd	0.371	63	0.158	95	3.73	11.95	2.0
63638	64009	CM-PJ-003	As rec'd	0.098	64	0.102	122	4.32	10.20	1.0
63638	64011	CM-PJ-003	As rec'd	0.085	62	0.102	122	8.66	10.32	2.0
63638	64013	CM-PJ-003	As rec'd	0.084	77	0.102	177	13.36	9.92	3.0
63638	64015	CM-PJ-003	As rec'd	0.067	79	0.108	177	23.32	9.81	5.0
63638	64143	CM-PJ-003	As rec'd	0.083	69	-	134	2.01	30.64	2.0
63638	65207	CM-PJ-003	As rec'd	0.104	75	0.113	95	6.66	9.67	2.0

Table 13.5-2: Summary of Column Leach Tests - Silver

KCA Sample No.	KCA Test No.	Description	Crush Size (mm)	Calculated Head (g/t Ag)	Silver Extract. (%)	Calc. Tail Size (P_{80} mm)	No. Leach Days	Cons. NaCn (kg/t)	Addition Cement (kg/M)	Target NaCN (g/l)
63636	64033	CM-PJ-001	As rec'd	34.07	78	0.125	111	5.75	10.14	1.0
63636	64035	CM-PJ-001	As rec'd	34.03	78	0.127	111	8.73	10.14	2.0
63636	64037	CM-PJ-001	As rec'd	31.10	94	0.119	166	12.37	10.02	3.0
63636	64039	CM-PJ-001	As rec'd	30.81	96	0.121	166	12.51	10.00	5.0
63636	64137	CM-PJ-001	As rec'd	32.83	64	-	134	3.89	28.63	2.0
63636	65201	CM-PJ-001	As rec'd	23.69	71	0.135	95	3.97	11.78	2.0
63637	64041	CM-PJ-002	As rec'd	49.94	65	0.131	111	6.36	10.13	1.0
63637	64043	CM-PJ-002	As rec'd	49.67	66	0.124	111	8.71	10.22	2.0
63637	64045	CM-PJ-002	As rec'd	47.00	74	0.136	166	11.20	10.00	3.0
63637	64047	CM-PJ-002	As rec'd	47.16	75	0.133	166	14.86	10.00	5.0
63637	64140	CM-PJ-002	As rec'd	48.91	64	-	134	2.65	27.32	2.0
63637	65204	CM-PJ-002	As rec'd	50.91	65	0.158	95	3.73	11.95	2.0
63638	64009	CM-PJ-003	As rec'd	92.24	50	0.102	122	4.32	10.20	1.0
63638	64011	CM-PJ-003	As rec'd	84.66	43	0.102	122	8.66	10.32	2.0
63638	64013	CM-PJ-003	As rec'd	91.85	52	0.102	177	13.36	9.92	3.0
63638	64015	CM-PJ-003	As rec'd	86.18	48	0.108	177	23.32	9.81	5.0
63638	64143	CM-PJ-003	As rec'd	93.05	51	-	134	2.01	30.64	2.0
63638	65207	CM-PJ-003	As rec'd	100.91	54	0.113	95	6.66	9.67	2.0

13.6 Acid-Base Accounting

After completion of the drain down test, the columns were dumped. A portion of material from 3 column tests was split out and submitted for acid-base accounting (ABA). ABA is a static test used to determine the acid producing or acid consumption potential of a mine ore or waste.

The ABA is comprised of 3 distinct determinations. To facilitate comparison of values, the acid neutralising potential (ANP), acid generating potential (AGP) and net neutralisation potential (NNP) or ABA, are expressed in units of metric tonnes $CaCO_3$ equivalent per 1000 metric tonnes of material.

The NNP or ABA in tonnes $CaCO_3$, equivalent per 1000 tonnes of material is given by the difference of the ANP and the AGP.

If a negative value is determined, the material may be classified as a potentially acid producing material. Conversely, if the value is positive, then the material may be classified as an acid consuming material. This test does not reflect the long-term acid producing potential of a material due to geological or bacterial degradation.

A summary of the ABA tests are presented in Table 13.6-1.

Table 13.6-1: Summary of Acid-Base Accounting

KCA Sample No.	Sample I.D.	Paste pH	Total Sulfur, %	Sulfate Sulfur, %	Sulfide Sulfur, %	AP-1 (Total Sulfur), MT/1,000MT	AP-2 (Sulfate Sulfur), MT/1,000MT	AP-3 (Sulfide Sulfur), MT/1,000MT
64037	CM-PJ-001	8.9	0.98	0.64	0.34	30.52	19.93	10.59
64045	CM-PJ-002	9.3	1.14	0.30	0.84	35.59	9.50	26.10
64013	CM-PJ-003	9.6	0.41	0.34	0.07	12.71	10.58	2.13

KCA Sample No.	Sample I.D.	NP, MT/1,000MT	NNP-1 (Total Sulfur), MT/1,000MT	NNP-2 (Sulfate Sulfur), MT/1,000MT	NNP-3 (Sulfide Sulfur), MT/1,000MT	NP/AP Ratio-1 (Total Sulfur)	NP/AP Ratio-2 (Sulfate Sulfur)	NP/AP Ratio-3 (Sulfide Sulfur)
64037	CM-PJ-001	95.6	65.1	75.7	85.0	3.133	4.798	9.029
64045	CM-PJ-002	81.9	46.3	72.4	55.8	2.300	8.621	3.137
64013	CM-PJ-003	44.2	31.5	33.6	42.0	3.475	4.177	20.694

NNP = ANP - AGP

NNP, ANP and AGP units are reported as MT $CaCO_3$ equivalents/1,000MT of material.

13.7 Discussion

For the CM-PJ-001 material (KCA Sample No. 63636), gold extractions ranged from 65% to 75% based on calculated heads that ranged from 0.341 to 0.388 g/t. The silver extractions ranged from 64% to 96% based on calculated heads that ranged from 23.69 to 34.07 g/t.

For the CM-PJ-002 material (KCA Sample No. 63637), gold extractions ranged from 63% to 67% based on calculated heads that ranged from 0.326 to 0.377 g/t. The silver extractions ranged from 64% to 75% based on calculated heads that ranged from 47.00 to 50.91 g/t.

For the CM-PJ-003 material (KCA Sample No. 63638), gold extractions ranged from 62% to 79% based on calculated heads that ranged from 0.067 to 0.104 g/t. The silver extractions ranged from 43% to 54% based on calculated heads that ranged from 84.66 to 100.91 g/t.

For the CM-PJ-001 and CM-PJ-002 material, the higher sodium cyanide levels increased the overall silver recovery. This was not as apparent with the CM-PJ-003 material. Cement levels had an effect on silver recovery with the CM-PJ-001 and CM-PJ-003 material being affected the most.

Column test extraction results were based upon carbon assays in comparison to the calculated head (carbon assays + tail assays). Extraction results were based upon the daily solution assays in comparison to the calculated head (solution assays + tailings assays).

When an outside party submits samples, KCA can estimate gold extraction for an ore body based upon the assumption that the ore to be mined will be similar to the samples tested. For feasibility study purposes, KCA normally discounts laboratory gold extractions by 2 to 3 percentage points when estimating field extractions. KCA normally discounts laboratory silver extractions by 3 to 5 percentage points when estimating field recoveries. This assumes a well-managed HL operation, and if agglomeration is required, it is assumed that this process is completed correctly.

Based upon KCA's experience with mostly clean non-reactive ores, cyanide consumption in production heaps would be only 25% to 33% of the laboratory column test consumptions. For ores containing high amounts of leachable copper, higher factors should be utilised.

In general, the small columns showed significantly higher sodium cyanide consumptions than either of the larger columns. For purposes of the PFS, KCA would look to average the sodium cyanide consumptions of the large columns and then utilise 30% of that value for use in studies.

Refer to the KCA testwork report[2] dated October 2012 for more detailed testwork results.

14 MINERAL RESOURCE ESTIMATES

GoGold retained the services of DRDAL to supervise the preparation of a resource block model and mineral resource estimate by SPM on the property in accordance with the reporting requirements of NI 43-101.

14.1 Geological Modelling

The mineral resource estimate for the project was generated using MineSight geological modelling software. A three-dimensional (3D) wireframe model was created for the 2 main deposits: Zone 1 to the north and Zones 2A and 2B to the south. To complete the mineral resource estimate, DRDAL assessed the raw database, the available maps and reports, and the geological modelling data that was available.

The mineral resource estimate was prepared under the supervision of D. R. Duncan, an independent QP as defined by NI 43-101. Practices consistent with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition of Standards for Mineral Resources (2005) were applied to the generation of the mineral resource estimate. There are no mineral reserves estimated for the property at this time.

14.2 Statistical and Data Analysis

The mineral resource estimate discussed in this section is based on 58 auger holes (1,076 m), 188 backhoe pits and 295 channel samples (856 m) with a total of 929 samples assayed for gold and silver (Table 14.2-1). This work was carried out between December 2011 and February 2012.

The drill holes were spaced from 50 m to 150 m apart. The backhoe pits were spaced on a 50 m x 50 m grid and vertical channel samples were collected along the perimeter of the tailings slopes.

Table 14.2-1: Summary of Raw Statistics of the Parral Tailings Samples

Metal	Description	Backhoe Pit	Channel	Auger
Gold	Count	188	295	446
(g/t)	Mean	0.311	0.308	0.289
	Standard Deviation	0.18	0.17	0.21
	Minimum	0.011	0.012	0.022
	25th Percentile (Q1)	0.170	0.215	0.125
	50th Percentile (Median)	0.343	0.309	0.302
	75th Percentile (Q3)	0.418	0.385	0.372
	Maximum	1.043	1.500	1.960
Silver	Count	188	295	446
(g/t)	Mean	37.0	37.3	40.5
	Standard Deviation	20.3	13.8	13.5
	Minimum	4	13	20
	25th Percentile (Q1)	27	26	30
	50th Percentile (Median)	33	33	35
	75th Percentile (Q3)	46	36	53
	Maximum	91	100	96
Gold Equiv.	Count	188	295	446
(g/t)	Mean	1.051	1.053	1.098
	Standard Deviation	0.34	0.23	0.230
	Minimum	0.091	0.445	0.659
	25th Percentile (Q1)	0.927	0.843	0.95
	50th Percentile (Median)	1.048	0.950	1.068
	75th Percentile (Q3)	1.160	1.147	1.2095
	Maximum	2.025	2.272	2.560

14.3 Drill File Preparation

The drill assay database was examined for errors, including overlaps and gaps within intervals, typographical errors in assay values, and supporting information on source of assay values. Approximately 50% of the assay data was checked against data in logs and assay certificates. The database was in good shape and no adjustments were required.

Verifications were also carried out on drill hole, channel sample and backhoe pit locations; lithology, bulk density and topographic information. No corrections were done to this information and the data in the MineSight database generated by SPM was in excellent condition and the data accepted as is.

14.4 Capping of High Grade Assays

Cumulative frequency plots of gold and silver assay values from the backhoe pit, channel samples and auger samples show no high outlier values and application of capping values is not required. See Figures 14.4-1 and 14.4-2 for plots of gold and silver, respectively.

Figure 14.4-1: Cumulative Frequency Plot for Gold (g/t)

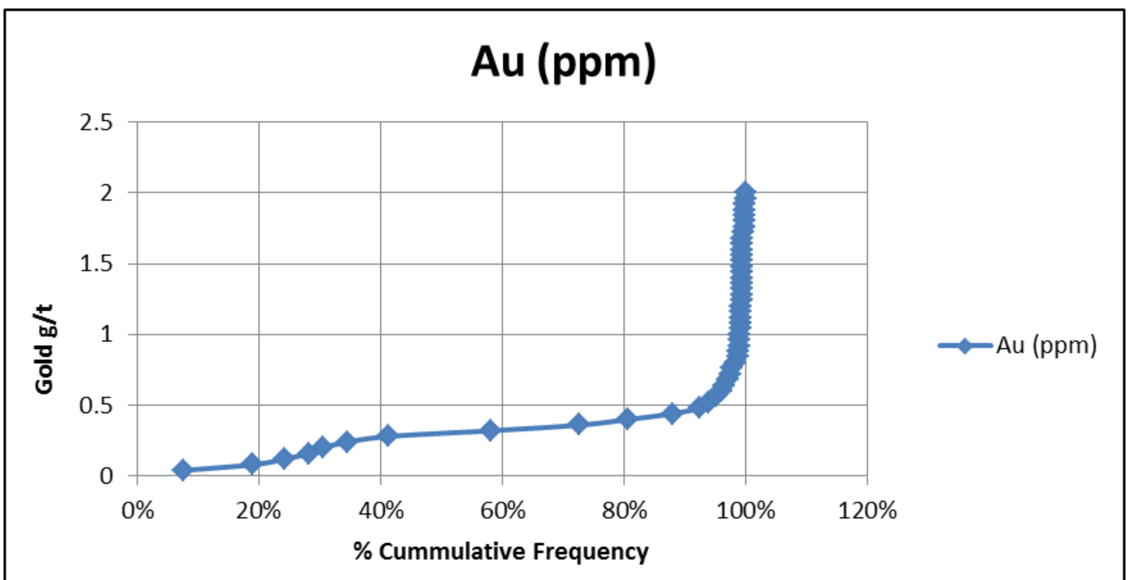
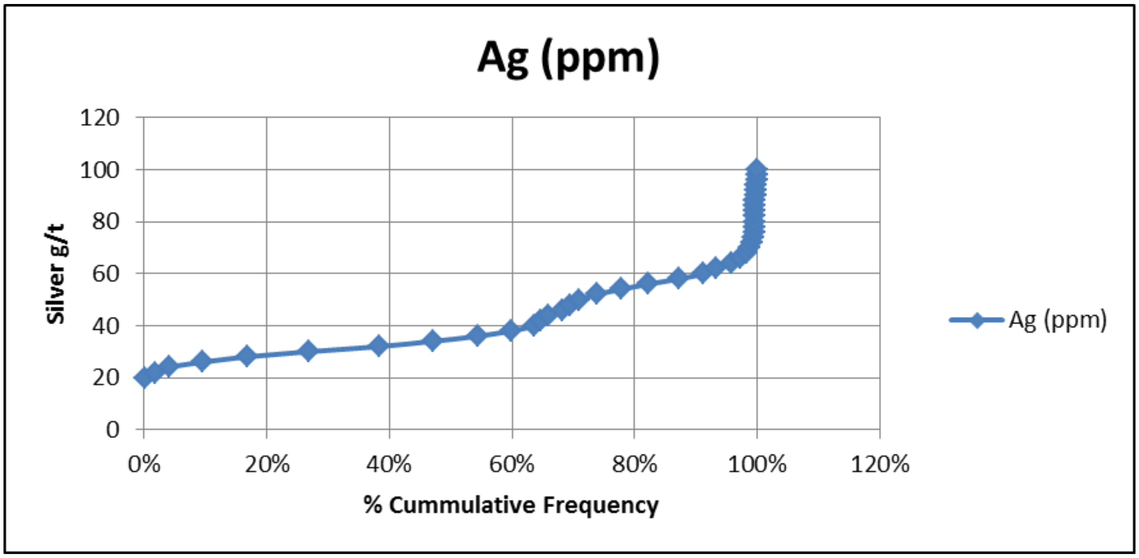


Figure 14.4-2: Cumulative Frequency Plot for Silver (g/t)



14.5 Composites

A total of 929 assay samples make up the drill database. The average length of the sample intervals is 2.5 m, with a range from 1 m to a high of 3.55 m. A 5 m composite length is used for the resource. Uniform 5 m composites were generated starting from the collar of each hole and end where the holes exit the mineralised solid (original land surface).

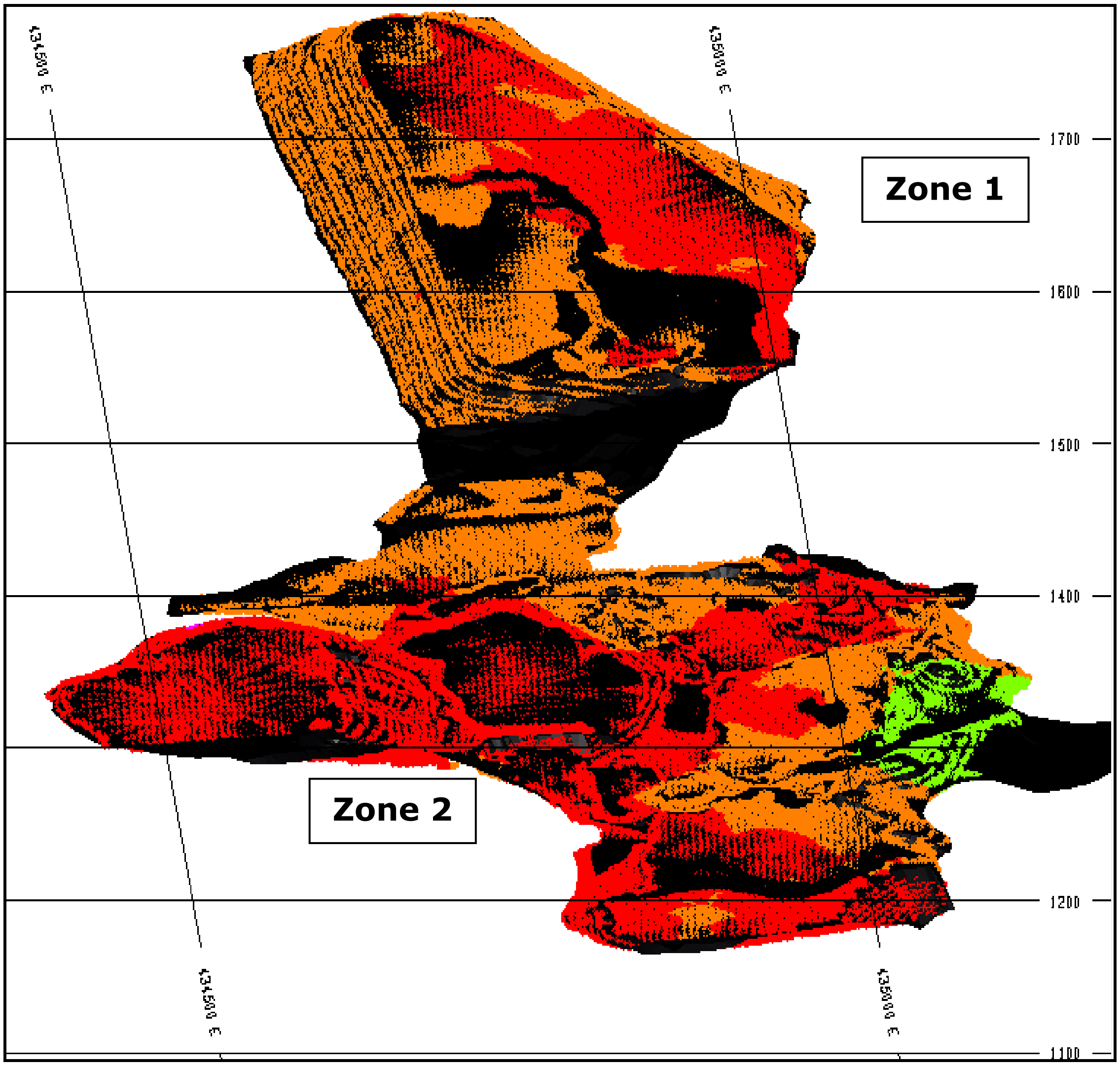
14.6 Block Model Description

The resource block model for the Parral Tailings deposit was constructed in MineSight software. The block model was constructed using 5 m x 5 m x 5 m blocks in the x, y, and z directions respectively. For simplification of the modelling, Zones 2A and 2B have been combined as a general Zone 2 in this section. For each block, the percentage below surface topography and within the mineralised domain was obtained. The model is not rotated.

The model was examined in cross section to confirm the wireframe honoured the drill hole elevation, lithology, assay data and the original surface topography.

Figure 14.6-1 shows an isometric view of the tailings model.

Figure 14.6-1: Isometric View of the Parral Tailings Deposit Looking North

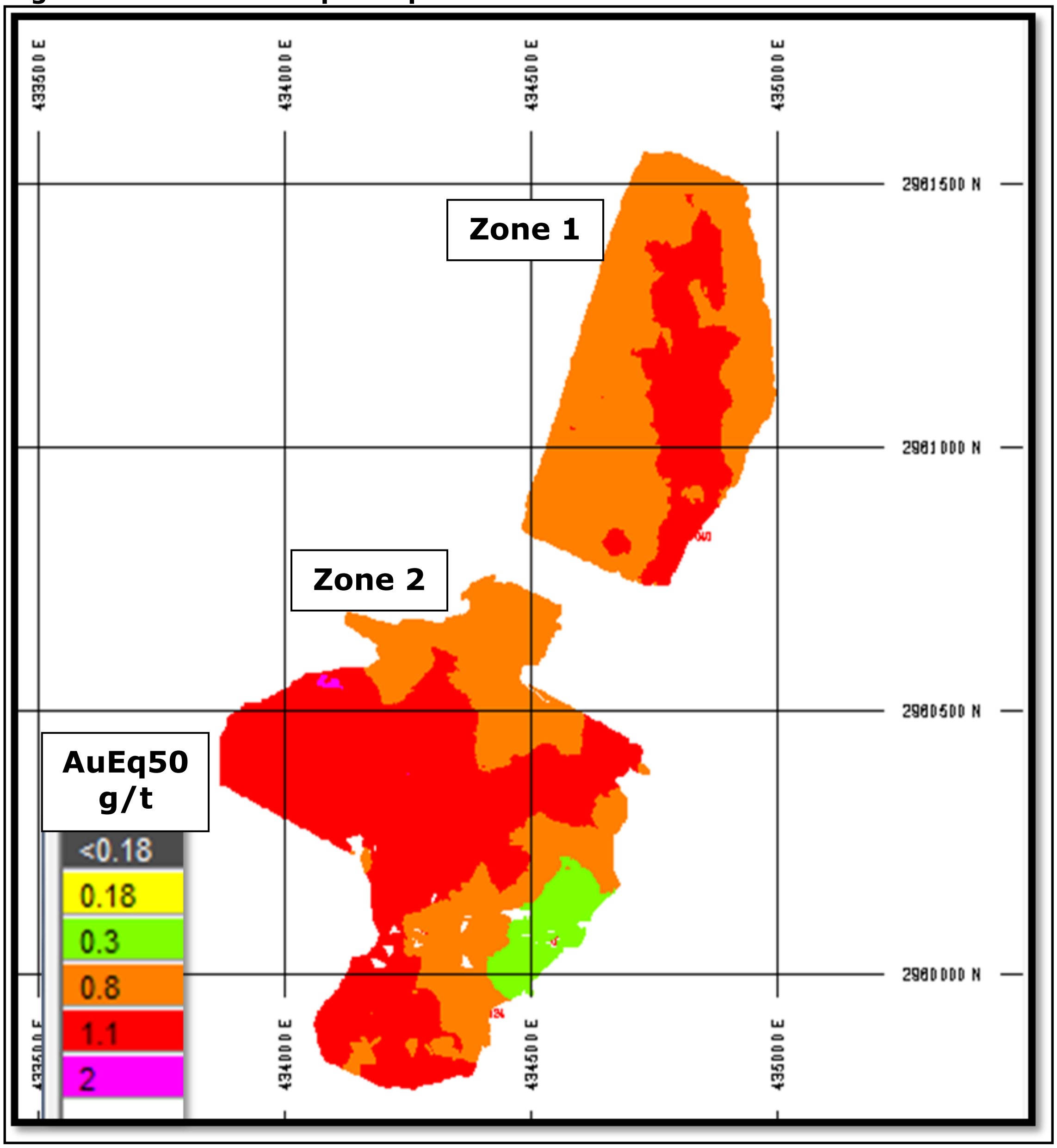


*MineSight image supplied by SPM, April 2012

Grades for gold and silver were interpolated into the blocks by Ordinary Kriging Method using a minimum of 1 and a maximum of 8 composites to generate block grades in the indicated category. The Kriging procedure was completed in one pass using a spherical search ellipse aligned along the principal directions set at 100 m.

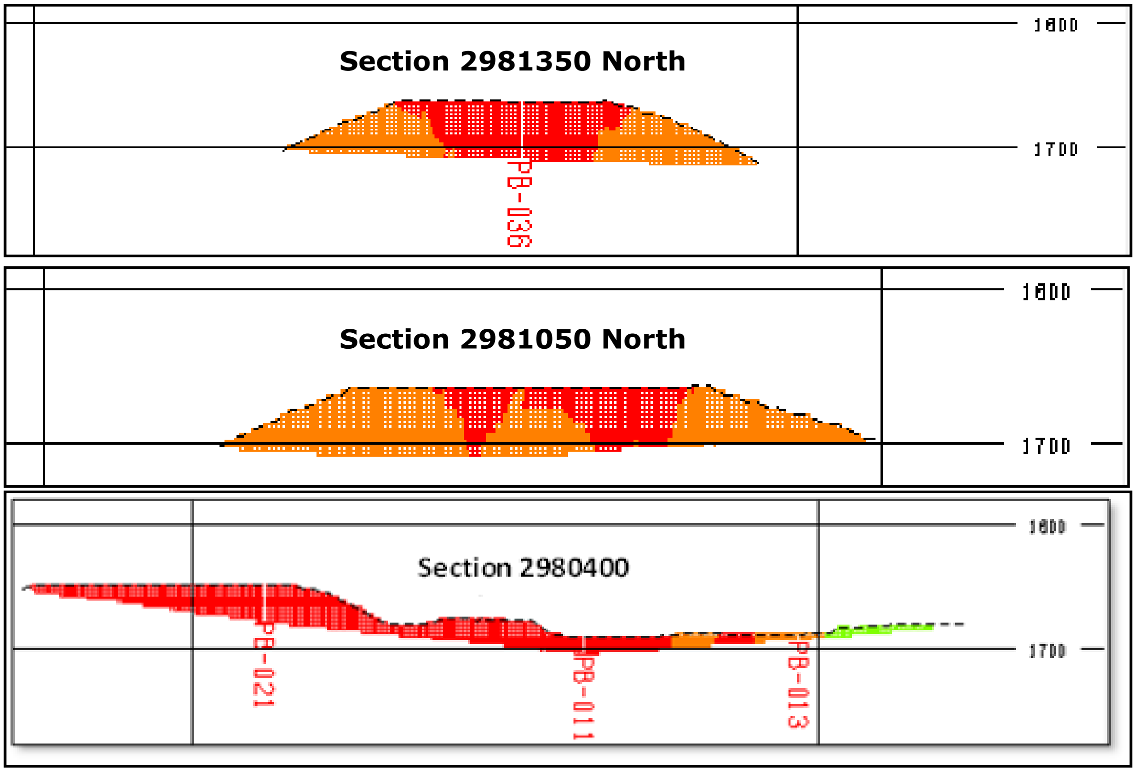
The equivalent gold grades are shown in both plan (Figure 14.6-2) and cross-section (Figure 14.6-3).

Figure 14.6-2: Plan Map of Equivalent Gold Grade Distribution



*MineSight image supplied by SPM, April 2012

Figure 14.6-3: Typical Cross-Sections of Equivalent Gold Grade Distribution



*MineSight image supplied by SPM, April 2012

14.7 Model Validation

For the tailings resource, the volume of the block model was identical to the volume of the wireframe model. The size of the search ellipse and the number of samples used to interpolate grade achieved the desired effect of assigning a grade to each of the resource block models.

Visual checks of the block model grades against the drill hole intersections showed that, as expected, the grades in the blocks proximal to the drill holes were very similar to drill hole grades. Comprehensive observations along 50 m section lines did not indicate that, overall, there was any positive or negative bias to these blocks that would skew the global resource grade.

14.8 Mineral Resource Classification

The mineral resource estimate is classified in accordance with the CIM Definition of Standards for Mineral Resources (2005). The 3 main elements considered during classification of the mineral resource were:

- Confidence in the geological continuity of the mineralised structures
- The quality and quantity of the exploration data supporting the estimates
- Geostatistical confidence in the tonnage and grade estimates.

The following discusses how these elements contributed to the classification decisions for the deposit. The QP has high confidence in the continuity of the tailings deposit. Upon reviewing the Kriging results generated during the estimation, the QP considers that an indicated resources classification is appropriate for the Zone 1 and 2 domains where drill intersection and vertical channel sample centres were spaced about 50 m apart.

The measured resource classification was applied to polygons with a 25 m radius around each drill hole. As a result of the extensive sampling and drilling that has been completed on the tailings, it is considered that there is sufficient drill density and confidence in the distribution of gold and silver within the tailings deposit to classify the deposit as measured and indicated mineral resources.

14.9 Resource Reporting

The grade and tonnage estimates contained herein are classified as indicated and measured given the CIM Definition of Standards for Mineral Resources (2005). As such, it is understood that:

<u>Indicated Mineral Resource</u>

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

Mineralisation may be classified as an indicated mineral resource by the QP when the nature, quality, quantity and distribution of data are such as to allow confident interpretation of the geological framework and to reasonably assume the continuity of mineralisation. The QP must recognize the importance of the indicated mineral resource category to the advancement of the feasibility of the project. An indicated mineral resource estimate is of sufficient quality to support a preliminary feasibility study which can serve as the basis for major development decisions.

<u>Measured Mineral Resource</u>

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

Mineralisation or other natural material of economic interest may be classified as a measured mineral resource by the QP when the nature, quality, quantity and *distribution of data are such that the tonnage and grade of the mineralisation can be estimated to within close limits and that variation from the estimate would not significantly affect potential economic viability. This category requires a high level of confidence in, and understanding of, the geology and controls of the mineral deposit.*

14.10 Mineral Resource Cut-off Grade

According to the CIM Definitions of Standards for Mineral Resources (2005), a mineral resource must be potentially economic in that it must be "in such form and quantity and of such grade or quality that it has reasonable prospects for economic extraction". For the Parral Tailings Project, a gold equivalent cut-off grade was assigned based on the economic assumptions given in Table 14.10-1. The assumptions were based on experience of reasonable operating costs for the mining and agglomerated HL of unconsolidated materials.

Table 14.10-1: Parameters for Gold Cut-off Calculation

Operating Costs Center	Unit	Cost/Mt (USD)
Contract mining		1.50
HL Treatment		5.50
G&A		1.00
Contingency (40%)		3.00
Total:		**11.00**
Average Silver/Gold Grade (g/t)	g/t	38.5/0.31
Average Gold Equivalent Grade (g/t)*	g/t	1.08
Silver/Gold Recovery	%	54/61
Gold Equivalent Recovery	%	56
Silver/Gold Price**		USD 28/USD 1,400

*Silver:Gold ratio of 50:1 used for gold equivalent

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The project is not subject to any royalties. The gold price assumption is a rounded figure based on a cumulated average from 2010 to mid-2012. Assuming the foregoing cost, gold price and recovery assumptions in Table 14.10-1, the gold equivalent (AuEq) grade cut-off would be 0.4 g/t.

14.11 Mineral Resources

A digital block model for the resource determination was developed using the computer software, MineSight. The model was prepared by SPM under the supervision of the QP. The database for the model included the 58 holes representing 446 assay samples, 188 samples from the pit channelling and 295 of the perimeter channel samples. All drilling was completed vertically and spaced between 50 and 100 m.

The grade distribution for silver and gold was examined in each domain using percentage cumulative frequency plots to determine if grade capping was required. No grade capping was required.

The block model was constructed in 5 m x 5 m x 5 m block dimensions and grade variables were interpolated using the Ordinary Kriging Method. The Kriging procedure was done on a single pass and the search ellipses were aligned along the principal directions in 100 m spheres. The mineral resource for Zones 1 and 2 was estimated using a global tonnage factor of 1.68 t/m^3.

The interpolation required a minimum of one composite and a maximum of 8 composites for each model block. Each block is capped at a maximum of 4 composites from a single drill hole. The determined mineral resource is presented in Table 14.11-1.

Table 14.11-1: Mineral Resource Statement at AuEq50 Cut-off of 0.4 g/t

Class / Zone	Au (g/t)	Ag (g/t)	AuEq 50 (g/t)	Qty. (Mt)	Total Au (Koz)	Total Ag (Moz)	AuEq 50 (Koz)	AgEq50 (Koz)
Zone 1								
Measured	0.37	31.1	0.99	1.7	20.8	1.7	55.8	2,790.0
Indicated	0.38	30.7	0.99	10.2	123.5	10.1	325.7	16,285.0
Sub-Total:	0.37	30.8	0.99	12.0	144.3	11.9	381.5	19,075.0
Zone 2								
Measured	0.24	46.8	1.17	2.2	17.0	3.3	83.4	4,170.0
Indicated	0.23	49.0	1.21	7.1	52.5	11.2	276.0	13,800.0
Sub-Total:	0.23	48.4	1.20	9.3	69.5	14.5	359.4	17,970.0
Zones 1 & 2								
Measured	0.30	39.9	1.09	4.0	37.8	5.1	139.2	6,960.0
Indicated	0.32	38.2	1.08	17.3	176.1	21.3	601.7	30,085.0
Total:	**0.31**	**38.5**	**1.08**	**21.3**	**213.8**	**26.4**	**740.9**	**37,100.0**

Notes to accompany mineral resources:

1. Mineral resources are not mineral reserves and do not have demonstrated economic viability

2. Mineral resources stated a AuEq50 cut-off of 0.4 g/t. This is based on an operating expenditure (OPEX) estimate of USD 11.00/t treated, gold price of USD 1,400/oz and a gold equivalent recovery of 56%

3.The figures in the table may not compute exactly due to rounding

4.The estimate of mineral resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.

The QP views the significant risks affecting the mineral resource estimate as being material changes in the commodity pricing and operating cost assumptions as well as the environmental permitting and the overall political situation of the country. These factors could affect a commercial decision by introducing additional Project risk and / or materially affecting the Project economics.

15 MINERAL RESERVE ESTIMATES

The mineral reserve is the portion of the mineral resource that is identified as being economically extractable and which incorporates mining losses and the possible addition of waste dilution. The mineral reserve forms the basis for the production plan used in the study. No inferred resource is used in the estimation of the mineral reserve. The mineral reserves have been developed using best practices in accordance with CIM guidelines and NI 43-101.

The mineral reserve estimate is developed in a 3-step process:

1. Select the optimised mining shell to be used for the operational pit design

2. Develop an operational pit design that incorporates benches and truck ramps

3. Estimate the tonnage contained within the designed pit and apply the ore criteria (losses and dilution) to the in situ ore tonnage that meets the economic cut-off grade.

These steps are described in the subsequent sections 15.2, 15.3 and 15.4.

15.1 Reserve Statement

The following mineral reserve has been estimated for the project and was derived from the resource block model developed by DRDAL. This model has been described in section 14 and P&E has made no changes to the model itself.

Table 15.1-1: Mineral Reserve

Category	Tonnage	Au (g/t)	Ag (g/t)	AuEq (g/t)
Proven	13,257,500	0.31	38.2	1.07
Probable	7,113,400	0.32	38.9	1.10
Total:	**20,370,900**	**0.31**	**38.4**	**1.08**

*AuEq = Au + (Ag/50)

The mineral reserve shown in Table 15.1-1 is based on a cut-off grade of 0.34 g/t AuEq and incorporates an ore loss of 0% and dilution factor of 0%. Since this is a man-made tailings deposit placed hydraulically, grade changes are very gradational and the underlying in-situ foundation will be distinct from the tailings material during mining. These characteristics will minimise any ore loss and dilution impacts.

15.2 Mine Area Optimisation

The mining area has been optimised using industry standard methods that are based on the criteria described in the following section.

The optimisation method uses the Lerches-Grossman algorithm in the Whittle-4X software. The procedure is applied on the resource block model using mining, processing and general administrative costs, selling prices, excavated slope angles, and process recoveries. Any inferred resources will be considered as waste material in the optimisation process.

The pit optimisation parameters listed in Table 15.2-1 were preliminary estimates used to initiate the mine planning process. The PFS has refined these costs and utilised the updated costs in the cashflow analysis for the project.

Table 15.2-1: Mine Optimisation Parameters

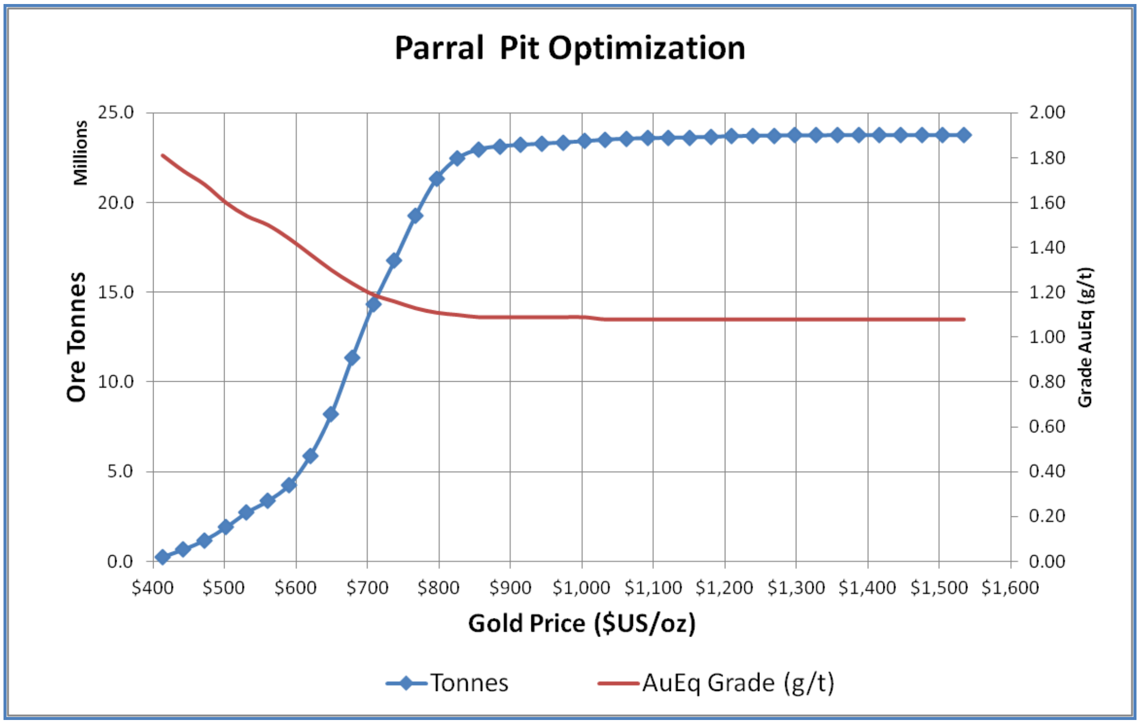
Description	Unit	Value
Gold		
Gold Price (USD)	$/oz.	1,475
Payable Metal	% Au	100
Refining / Transport	$/oz.	7.00
Silver		
Silver Price (USD)	$/oz.	29
Payable Metal	% Au	100
Refining / Transport	$/oz.	0.50

Description	Unit	Value
Operating Costs		
Mining Cost (to HL)	\$/t mined	3.80
Mining Cost (Waste)	\$/t waste	2.65
Processing Cost	\$/t processed	9.50
Town Cost	\$/t processed	0.20
G&A		
Process & Mining Losses	\$/t processed	0.60
Gold Process Recovery	%	65
Silver Process Recovery	%	58
Dilution	%	0
Cut Slope Angles (Overall)	°	26 (2:1)
Mill Throughput	t/a	1,800,000

A series of economic mining-shells were generated by the optimisation software, using varying revenue factors that represent different metal prices.

Figure 15.2-1 presents the grade-tonnage curve at different revenue factors converted to gold price. It is apparent that above a gold price of USD 800.00/oz., the mineable tonnage and ore grade do not change significantly. The mining shell defined by the revenue factor of 1.0 (USD 1,475.00/oz.) was selected as the basis for the pit design but the USD 900.00 shell would have yielded essentially the same result. Note that the tonnage being shown in the graph (~23 Mt) is that contained within the entire block model, however the mine plan will only be mining down to original topography and will therefore clip any ore blocks generated below topography. Hence the reserve tonnage is approximately 20.4 Mt.

Figure 15.2-1: Pit Optimisation Result



15.3 Mining Pit Design

The next step in the mineral reserve estimation process was to design an operational pit that would form the basis for the production plan.

This pit has been sub-divided into various zones for mine sequencing purposes; however, these zones do not affect the overall reserve estimate contained within the ultimate pit. The pit zones and mine schedule are described further in section 16 of this document. Figures 15.3-1 and 15.3-2 show a plan view of the defined mining area before and after mining.

Figure 15.3-1: Pit Plan (Before Mining)

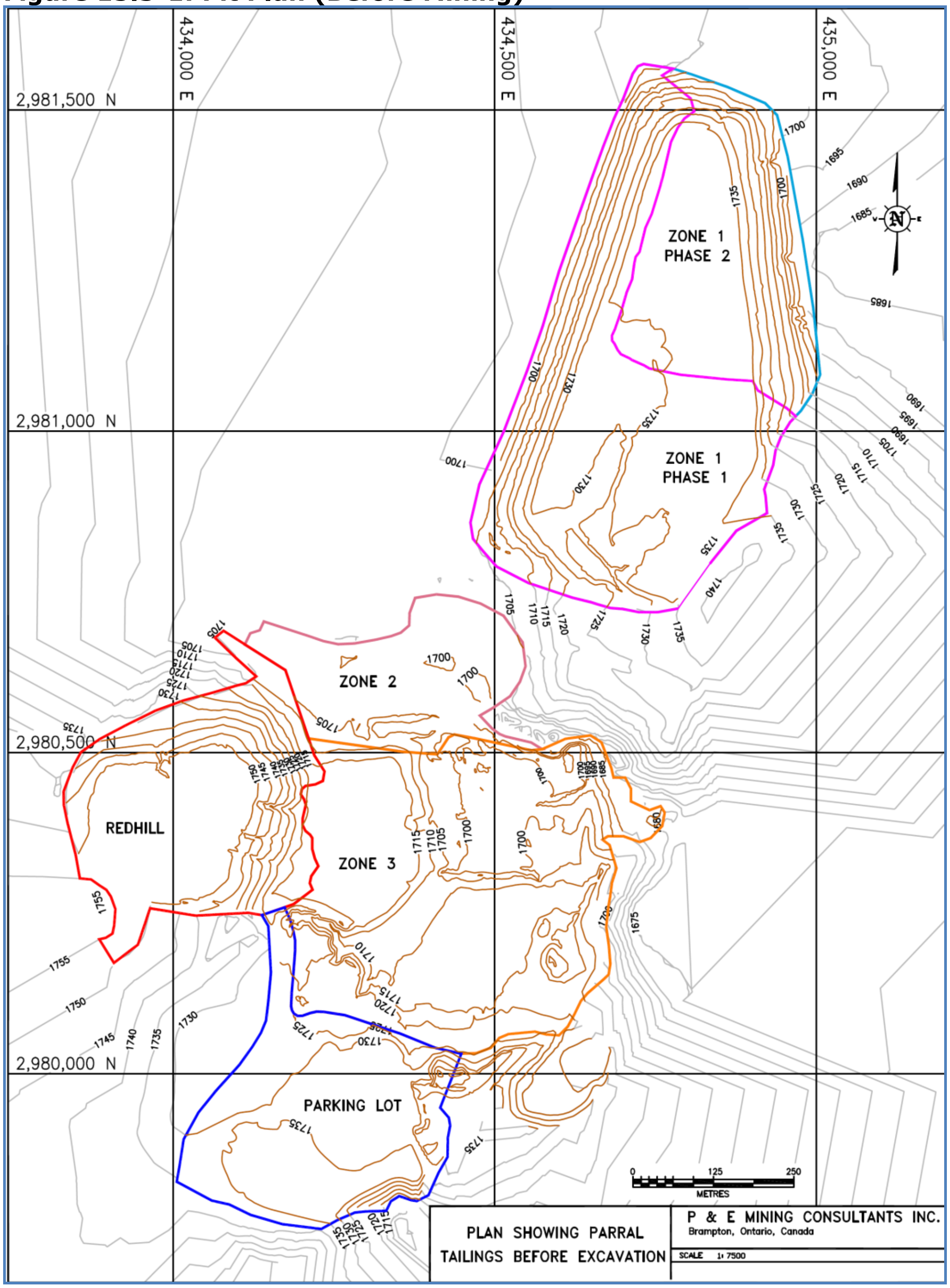
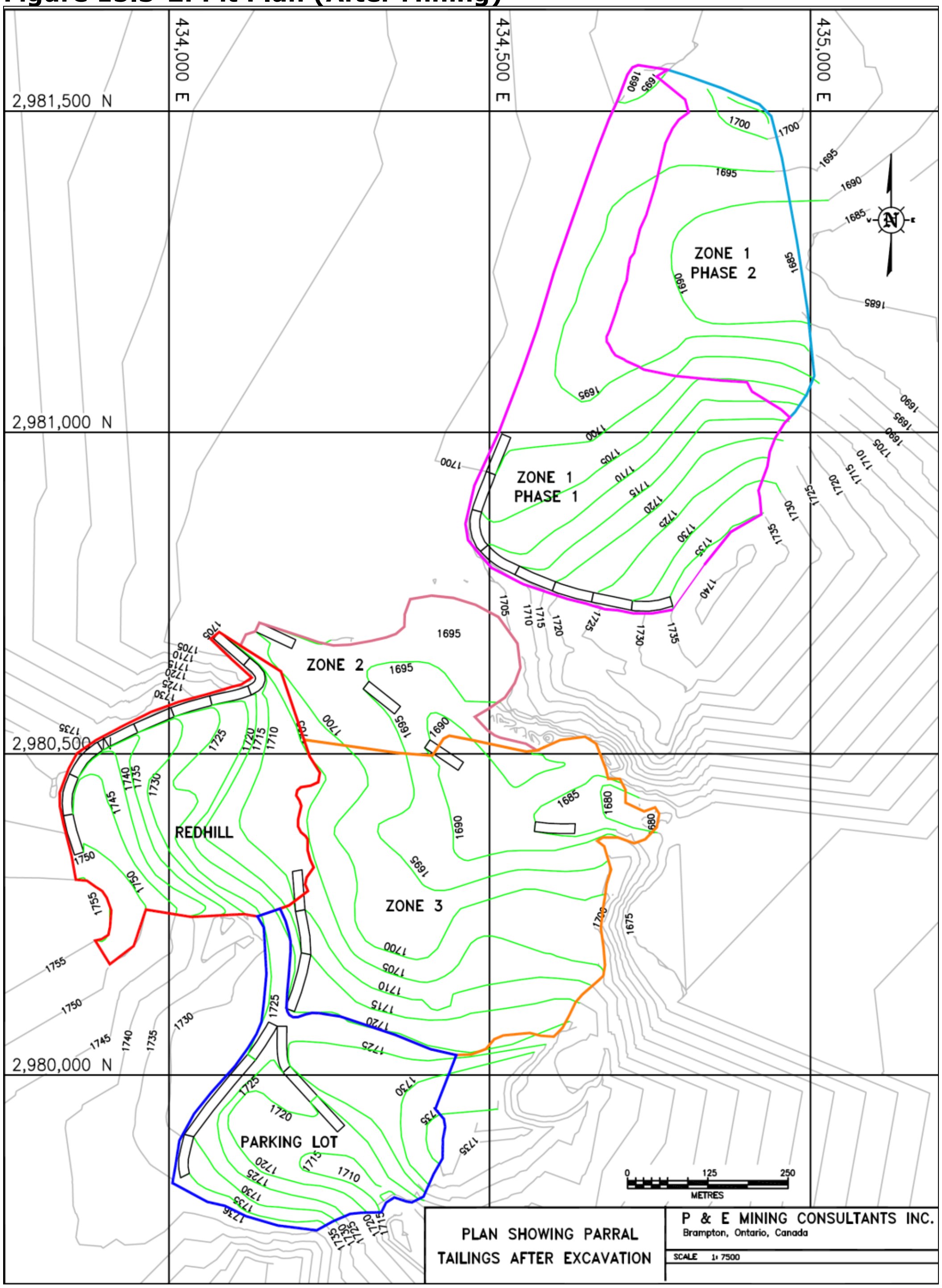


Figure 15.3-2: Pit Plan (After Mining)



15.4 Ore Criteria and Reserves

In order to determine the mineral reserves, one must apply any foreseen mining losses and dilution to the tonnages contained within the pit.

Ore Losses

The tailings being mined has been deposited upon natural topography. Since the mining operation will mine the bulk of the tailings mass no mining losses would be expected. As one nears the original topography, poor mining practices could theoretically leave behind some tailings. Given the visual distinctiveness of the materials, however, one would expect excellent recovery, which would result in only a minor ore loss compared to the total mass of tailings. An ore loss factor of 0% has thus been applied to the reserve.

Dilution

The tailings were placed hydraulically which means grade trends would be very gradual. There is no sharp contact between ore and waste, except along the tailings floor. For reasons described above, over-digging can be minimised and dilution would be minimal. A dilution factor of 0% has been assumed. The total waste to ore ratio for the mining area is a very low 0.01:1, indicating that waste material will have a negligible effect on the mining operation.

Table 15.1-1 presents the estimated mineral reserve and has been used in the production plan.

16 MINING METHODS

The Parral Project will be developed as a moderate-scale surface mining operation. The scale of production will require mining rates on the order of 5,200 t/day or 1.8 Mt/a of tailings. Waste handling quantities will be minimal.

The following sections describe the mining operation in detail.

16.1 Geotechnical and Hydrological

16.1.1 Mine Geotechnical

No site specific geotechnical investigations have been completed to date on the tailings deposits, however the material will entail the removal of historical tailings piles containing fairly uniform fine grained silts and sands.

For the purposes of mine design, where cut slopes are required they will be designed at 2:1 slopes (or 26º). The base of the pits may also follow the original natural topography, which is a gradually undulating surface and does not consist of steep cut slopes.

16.1.2 Mine Hydrogeology

No site specific hydrogeological investigations have been completed to date on the tailings deposits. The majority of these deposits are above topography and therefore would have been relatively free draining over the years. Internally within the tailings piles there may be an equilibrium water table developed based on precipitation inflows and seepage outflows but there is likely no natural groundwater recharge to these deposits. The use of in-pit ditching and collection sumps will assist with the drainage of the tailings when mining.

16.2 Pit Design

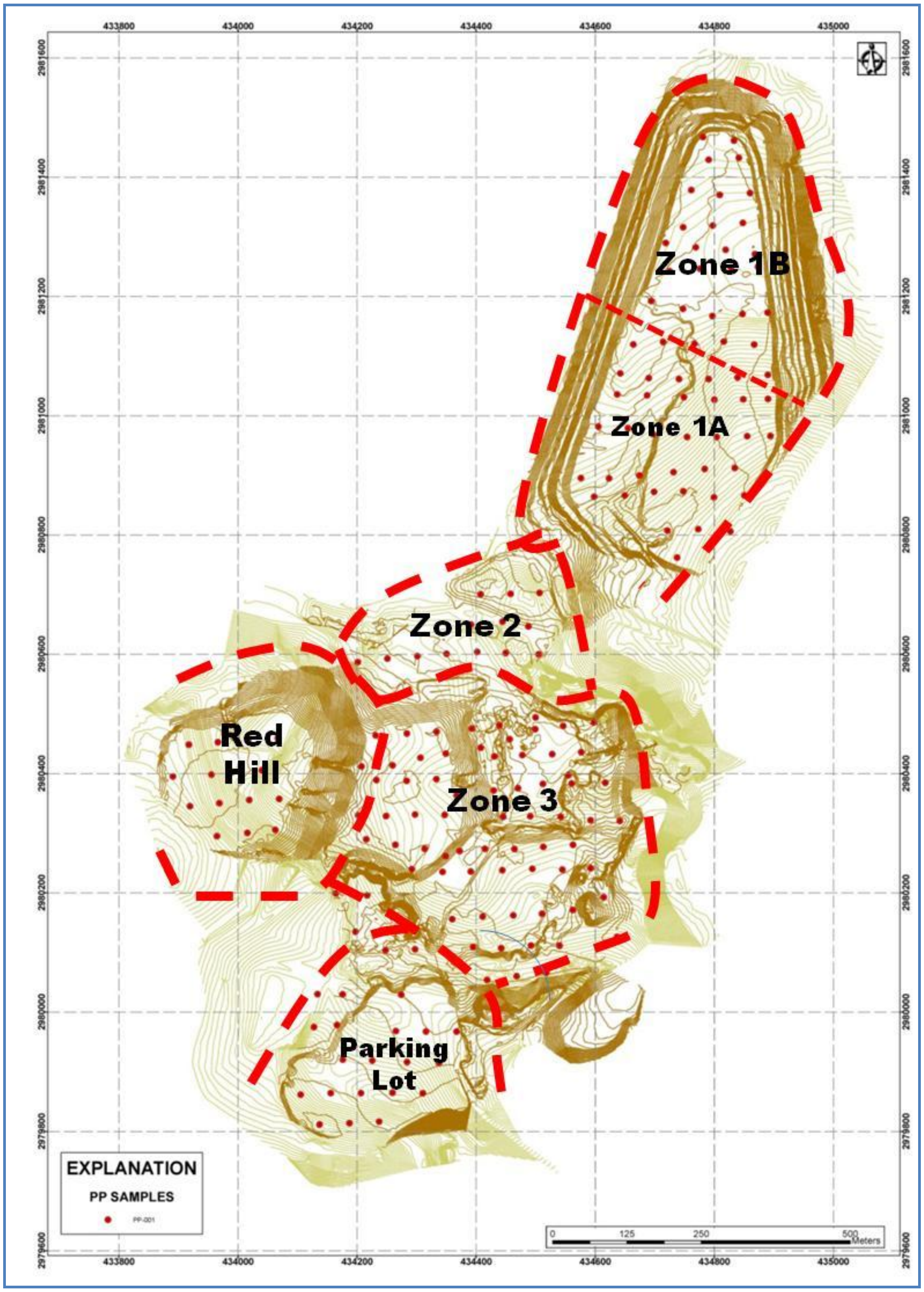
The mining area selection methodology is described in Section 15. In order to sequence mining development activities over the life of the project, a phased pit approach has been implemented. The pit has been subdivided into 5 zones, as shown in Figure 16.2-1 and summarised in Table 16.2-1.

Tailings from each of the mining zones will be transported east past the Zone 1 area and to the HL pad several kilometres away. Any waste encountered during mining will be hauled locally and placed within mined out areas.

Table 16.2-1: Mining Zone Tonnages

Zone	Ore Tonnes	Au g/t	Ag g/t	AuEq g/t	Waste Tonnes	Total Tonnes	Strip Ratio
Red Hill	2,949,500	0.07	68.9	1.45	128,600	3,078,100	0.04
Zone 1	11,886,700	0.37	30.8	0.99	50,800	11,937,500	0.00
Zone 2	535,000	0.33	32.7	0.99	21,900	556,900	0.04
Zone 3	3,571,400	0.30	39.9	1.09	34,100	3,605,500	0.00
Parking Lot	1,428,300	0.34	37.7	1.10	50,200	1,478,500	0.00
Total	**20,370,900**	**0.31**	**38.4**	**1.08**	**285,600**	**20,656,400**	**0.01**

Figure 16.2-1: Mining Zones



16.3 Mine Production Schedule

The mining area pit was sub-divided into 5 zones to allow efficient sequencing of mining operations each year and to target the higher gold equivalent grades earlier in the schedule. Mining will generally occur in a single zone within a given year to avoid spreading out operation disturbances more than necessary. Table 16.3-1 presents the life of mine (LoM) production schedule. Note that for Year 1 mining tonnages are shown on a quarterly basis to represent the production ramp up.

Table 16.3-1: Mine Production Schedule

Year	Zone	Ore Tonnes	Au g/t	Ag g/t	AuEq g/t	Waste Tonnes	Total Tonnes
1 Qt.	RedHill	135,000	0.05	64.0	1.33	8,440	143,440
2 Qt.	RedHill	255,000	0.05	66.0	1.37	31,223	286,223
3 Qt.	RedHill	405,000	0.05	67.0	1.39	35,000	440,000
4 Qt.	RedHill	450,000	0.05	68.7	1.43	8,896	458,896
2	RedHill & Z3	1,800,000	0.09	68.8	1.46	45,832	1,845,832
3	Z3	1,800,000	0.26	41.4	1.08	7,729	1,807,729
4	Z3 & 2	1,800,000	0.34	37.9	1.10	25,817	1,825,817
5	Z2 & 1A	1,800,000	0.38	31.5	1.01	26,277	1,826,277
6	Z1A	1,800,000	0.36	29.4	0.95	6,027	1,806,027
7	Z1A & 1B	1,800,000	0.39	30.9	1.01	17,539	1,817,539
8	Z1B	1,800,000	0.39	31.9	1.03	427	1,800,427
9	Z1B	1,800,000	0.38	31.3	1.00	1,351	1,801,351
10	Z1B	1,800,000	0.36	30.6	0.98	8,824	1,808,824
11	Z1B & Parking Lot	1,800,000	0.35	31.0	0.97	20,627	1,820,627
12	Parking Lot	1,125,811	0.35	38.2	1.11	41,539	1,167,350
Total		**20,370,811**	**0.31**	**38.4**	**1.08**	**285,548**	**20,656,359**

16.4 Open Pit Mining Practices

The following sections describe the details of the various mining operation activities. These will be undertaken by a rental equipment fleet under management of the Owner. Equipment and workforce productivity are based on working one 10 h shift per day over 6 days per week. Table 16.4-1 presents the basis for the daily working hours and productive time.

Table 16.4-1: Operations Productivity Basis

Description	Unit	Value
Annual Operating Days		
Scheduled Days per Week	days	6
Scheduled Weeks per Annum	weeks	52
Day per Annum	days	312
Lost Days (due to holidays, weather, etc.)	days	-7
Full Year Operating Days	days	305
Average per Month	days	25.4
Operator Efficiency		
Minutes per Hour	min	60
Productive Minutes	min	50
Production Efficiency	%	83.3
Operator Efficiency	%	93
Operating Efficiency	%	77.5
Productive Time		
Shifts per Day	shifts	1
Hours per Shift	h	10
Hours per Day	h	10
Delays and Breaks per Shift	h	1.2
Working Hours per Shift	h	8.8
Working Hours per Day	h	8.8
Working Hours per Month	h	224
Working Hours per Annum	h	2.684

16.4.1 Topsoil Recovery

Generally, all of the tailings zones are exposed at surface with little reclamation cover or vegetation capping. The exception to this is the large tailings pile at Zone 1 that has been capped with a layer of soil and re-vegetated. When mining this pile, it will be necessary to bulldoze up the thin soil layer and recover the material for reclamation of previously mined out areas. This topsoil quantity is expected to be minimal.

16.4.2 Loading and Hauling

Due to the nature of the tailings deposit, no drilling and blasting will be required. All of the tailings material will be free digging with a hydraulic excavator. The tailings have an insitu bulk density of 1.68 t/m^3 and an expected loose bulk density of 1.40 t/m^3.

Ore grade control drilling will not be required due to the expected uniformity of the insitu grades. The digging limits for the mining operation will simply be defined by the resource model.

Excavators

Excavation of the tailings material will be accomplished with 5 m^3 hydraulic excavators in a backhoe configuration. Some contractor discussions were held about the use of front-end wheel loaders but there is concern that the back and forth reworking of the tailings running surface by the loader could result in poor trafficability conditions.

The 5 m^3 excavators will be loading 50 t capacity highway trucks and thus 8 pass loadings will be required. The loading time per truck will be approximately 5.3 minutes and the hourly production from an exactor is expected to be 439 t/h, equivalent to between 8 to 9 trucks loaded per hour. A total of 2 rental excavators will be required in the equipment fleet to maintain production.

Trucks

Haulage of the tailings material will be accomplished using 50 t capacity truck and possibly a pup unit on-highway trucks. Figure 16.4.2-1 shows the truck style proposed by the contractor.

Figure 16.4.2-1: On-Highway Haul Truck

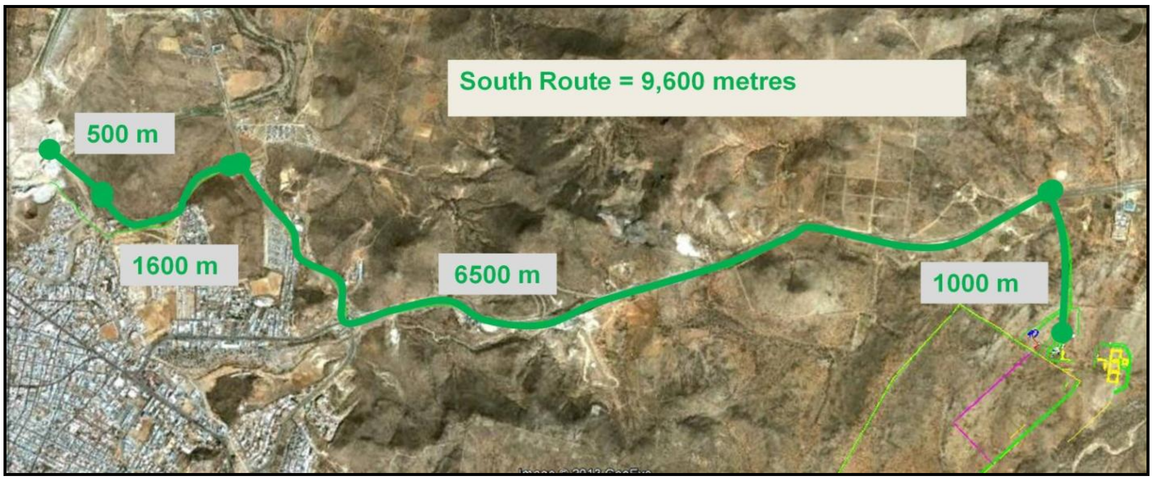
The haulage distance from the tailings site to the HP site is about 9.6 km, as shown in Figure 16.4.2-2. Based on haul criteria, as shown in Table 16.4.2-1, the travelling time to-and-from the pit to the HL pad will average 34 min, resulting in a total cycle time of about 41 min per truck load. For the minimal amount of waste to be dealt with, a travel distance of 700 m was assumed.

A fleet of 11 to 12 rental haulage trucks will be required to maintain production.

Table 16.4.2-1: Hauling Productivity Criteria

	Distance (km)	Average Speed (Loaded)	Average Speed (Empty)
Pit to Haul Road	0.5	20 kph	25 kph
Haul Road to Highway	1.6	30 kph	40 kph
Highway to HL Site	6.5	40 kph	70 kph
HL Site to Stockpile	1.0	20 kph	25 kph
Total	**9.6**		

Figure 16.4.2-2: Haul Travel Route to HL Site



16.4.3 Pit Drainage

While this region of Mexico is dry most of the year, there is a wet season and there may be existing water tables in the tailings piles. Hence from time to time there may be a requirement to handle excess water in the mining area. An allowance will be included in the operating cost for the pit drainage.

16.4.4 Mine Auxiliary Services

The tailings mining operations will be supported by a service equipment fleet.

A road grader will be used to maintain the various haul roads within the pits and out of pit to the highway.

The graders will operate on a 10 h basis as per the rest of the mine operation. A water truck will be used for dust control during dry periods.

Bulldozers will be used to prepare equipment access ramps to the various mining levels. Dozers may also be used to clean up in the mining areas, clean off reclamation materials, maintain drainage, and assist with clean-up mining at the base of the tailings deposits. At least 2 dozers will be required in the equipment fleet.

Mine operations will be supported by a mobile fuel and lube truck to service the non-mobile equipment in the pit. These will be provided by the contractor who is responsible to man and maintain all rental equipment.

Miscellaneous maintenance and service vehicles will consist of crew bus, pick-up trucks, flatbed trucks and maintenance trucks. These vehicles will be provided by the contractors as part of his rental equipment support.

Site facilities required to support the mining operation include a small equipment repair shop and laydown areas for spare equipment and major components. These facilities will be provided by the contractor.

The mine technical team and mine supervisors will require mine site office facilities. These can be trailers or portable structures.

16.5 Mining Manpower

The mining operation will rely on the use of rental equipment. The contractor will provide all the necessary manpower to operate and maintain the equipment with the costs for these personnel included in the equipment rental rates.

Technical management and field supervision of the mining operation will be provided by Owner. Therefore, a small team of 7 mining management personnel will be at site. These are listed in Table 16.5-1 and will remain constant for the life of mine. It is expected that all of these personnel would be Mexican nationals and expatriate staffing would not be required in the mine.

Table 16.5-1: Mining Manpower (Owner's Team)

Description	No.	Role
Mine Superintendent	1	Oversee the entire mining and hauling operation, including field and office staff and contract management.
Mine Foreman	1	Provide supervision of the field supervisions, and contractors, vacation relief.
Field Supervisors	2	Provide continuous supervision of the excavation activity and of the haulage activity.
Chief Mine Engineer	1	Maintain mine layout design, production records, grade control, geotechnical and drainage design, and vacation relief.
Mine Surveyor	1	Complete field surveying of excavation, production performance calculations, and set excavation limits
Mine Survey Technician	1	Assist in field surveying, calculations, and drafting.

17 RECOVERY METHODS

17.1 General

Location	Parral 220 km from the state capital, the city of Chihuahua
GPS Coordinates	26°56'35"N, 105°39'40"W
Nearest Major Town	Chihuahua
Access to Site	Tarred main road, the rest gravel
Elevation	1620 m AMSL
Maximum Temperature	33 °C
Minimum Temperature	2 °C
Average Annual Temperature	17.6 °C
Annual Rainfall	490.5 mm
Percentage Winter Rain	7.3%
Annual Evaporation	914.4 mm
Maximum Monthly Rainfall	132 mm in July
Minimum Monthly Rainfall	1.6 mm in March
Precipitation (100 year storm)	50 mm/day
Predominant Wind Direction	South-easterly
Topography	Undulating terrain

17.2 Feed Characteristics

Table 17.2-1: Ore Receiving Design Criteria

Parameter	Unit	Value
Ore Source	type	Tailings
Ore S.G.	t/m^3	2.80
Ore Bulk Density	t/m^3	1.68
Ore Moisture Content	% w/w	5
Recovery Gold (Design)	%	65
Recovery Silver (Design)	%	58
Recovery Copper (Design)	%	45
Plant Feed Particle Size (F_{100})	um	300
Plant Feed Particle Size (F_{80})	um	225

17.3 Key Design Criteria

Table 17.3-1: Ore Receiving Design Criteria

Ore Receiving Design	Unit	Value
Feed Bin Design		
Feed Bin	type	Road Truck
Truck Size	t	50
Tipping Bin Capacity (volume)	t	100
Tipping Bin Capacity (time)	min	24
Discharge Feeder Type	type	Belt Feeder
Discharge Feed Capacity	t/h	250
Feed Surge Stockpile Design		
Feed Stockpile	type	Open
Feed Stockpile Capacity	h	36

Ore Receiving Design	Unit	Value
Feed Stockpile Size	t	9,000
Scalping Screen Design		
Screen Type	type	Horizontal, Vibrating
Screen Aperture Size	mm	25
Screen Panel Type	type	Polyurethane

Table 17.3-2: Agglomeration / Stacking Design Criteria

Agglomeration / Stacking Design	Unit	Value
Agglomeration Design		
Agglomerator Type	type	Horizontal Rotary Drum
Agglomerator Size	dimension	2.4 m dia. x 7.5 m long
Agglomeration Residence Time	min	10
Agglomerator Product Moisture	%	18
Cement Silo Design		
Cement Addition Rate	kg/t	15
Cement Storage Silo Size	t	200

Table 17.3-3: HL Design Criteria

HL Design	Unit	Value
HL Pad Design / Construction		
Heap Feed Rate	t/h	250
Number of Grasshoppers Required	no.	22
Stacking Method	type	Stacker Conveyor
HL Liner Type	type	HDPE
Pad Liner Thickness	mm	1.5

HL Design	**Unit**	**Value**
Cell Length	m	190
Cell Width	m	40
Cell Height (Average)	m	10
Design Number of Lifts	no.	1
Cell Slope	o	37
Average Heap Length	m	1,640
Average Heap Width	m	840
Total Storage Capacity	Mt	21.2
HL Solution Management		
Material Bulk Density	t/m^3	1.68
Ore Head Grade (gold)	Au g/t	0.32
Ore Head Grade (silver)	Ag g/t	45.02
Ore Head Grade (copper)	Cu g/t	756.60
Leaching Recovery (gold)	Au %	65
Leaching Recovery (silver)	Ag %	58
Leaching Recovery (copper)	Cu %	45
Testwork Compressed Permeability	$L/m^2/h$	50
Leach Wash Rate	$L/m^2/h$	10
Application Method	type	Drippers
Dripper Spacing	m	0.95
Irrigation Flowrate Required Per Cell	m^3/h	76
Calculated Number of Cells Under Irrigation	no.	3
Irrigation Flowrate Required (Total)	m^3/h	228

Table 17.3-4: Clarification Circuit Design Criteria

Clarification Circuit Design	Unit	Value
Clarification Method	type	Plate & Frame
Specific Solution Flowrate	$m^3/h/m^2$	0.5
Number of Filters	no.	2
Filter Cloth Type	type	Polypropylene
Filter Aid Type	type	Diatomaceous Earth
Backwash / Coating Time	h	2

Table 17.3-5: Deaeration / Precipitation Circuit Design Criteria

Deaeration / Precipitation Circuit Design	Unit	Value
Deaeration Circuit		
Vessel Type	type	Packed Tower
Packing Type	type	Rings
Tower Specific Flowrate	$m^3/h/m^2$	1.5 – 2.0
Precipitation Circuit		
Zinc Addition	reagent	Zinc Powder, Lead Nitrate
Zinc Feeder Type	type	Belt Feeder
Excess Zinc Addition Rate	%	50
Zinc Addition Rate Required	kg/t	0.65
Lead Nitrate Addition	ppm	10 – 15
Zinc Induction Method		Mixing Cone

Table 17.3-6: Filtration Design Criteria

Filtration Design	Unit	Value
Primary Precipitate Filter		
Filter Type	type	Plate & Frame
Filter Cloth Type	type	Cloth & Paper
Operating Cycle Time	days	5
Secondary Filtration		
Filter Type	type	Plate & Frame
Specific Solution Flowrate (Design)	$m^3/h/m^2$	1.8
Number of Filters	no.	2
Filter Cloth Type	type	Polypropylene
Filter Aid Type	type	Diat. Earth
Suspended Solids in Feed	mg/L	100 – 300
Suspended Solids in Discharge	mg/L	1
Backwash / Coating Time	h	2

Table 17.3-7: Copper Leaching and Filtration Design Criteria

Copper Leaching & Filtration Design	Unit	Value
Copper Leaching		
Type of Leach	type	Sulphuric Acid
Acid Consumption	kg/day	100
Batches per Day	no.	1
Residence Time	h	8
Copper Filtration		
Filter Type	type	Plate & Frame
Specific Flow Rate	$m^3/h/m^2$	1.8
Operating Cycle Time	h	4

Table 17.3-8: Neutralisation Circuit Design Criteria

Neutralisation Circuit Design	Unit	Value
Caustic Addition Rate	kg/t	100
Residence Time	h	6
Barren Solution Grade (Gold)	Au g/m^3	0.02
Barren Solution Grade (Silver)	Ag g/m^3	0.50
Barren Solution Grade (Copper)	Cu g/m^3	2.00

Table 17.3-9: Gold Room Design Criteria

Gold Room Design	Unit	Value
Process	type	Calcine / Direct
Furnace Type	type	Electric
Furnace Size	L	200
Product	type	Ag/Au Bullion
Product Size	kg	24

Table 17.3-10: Reagents Design Criteria

Reagents Design	Unit	Value
Cement		
Delivery Method	type	Bulk Fine Powder
Dry Mass Percentage	%	98
Cement Specific Gravity	t/m^3	1.84
Delivery Truck Size	t	30
Storage Silo Capacity	t	200
Silo Discharge Method	type	Rotary Valve & Screw Feeder
Addition Point	position	Agglomerator Feed Conveyor

Reagents Design	Unit	Value
Cement Addition Rate	kg/t	15
Cyanide		
Delivery Method	type	1 t Bags of 98% NaCN
Delivery Concentration	%	98
Container Size	t	1
Cyanide Dosage Strength	%	25
Cyanide Specific Gravity	t/m^3	1.6
Cyanide Addition Density	t/m^3	1.15
Cyanide Storage Capacity	days	2
Addition Rate @ Barren Pond	kg/t	1.2
Addition Rate @ Agglomerator	kg/t	1.28
Addition Rate @ Zn Precipitation	kg/t	0.5
Storage Size	m^3	25
Total Consumption	kg/t	3
Caustic		
Delivery Method	type	25 kg Bags of NaOH Pearls
Delivery Concentration	%	98
Delivery Container Size	t	1
Delivery Strength	m/m	45
Caustic Specific Gravity	t/m^3	2.53
Caustic Addition Density	t/m^3	1.48
Storage Capacity (time)	days	4
Storage Capacity (volume)	m^3	15
Specific Gravity @ 45% m/m	t/m^3	1.53
Consumption Rate	kg/t	100

Reagents Design	Unit	Value
Zinc		
Delivery Method	type	50 kg Bags of 99% Zn
Delivery Concentration	%	99
Zinc Delivery Density	t/m^3	7.14
Stoichiometric Addition	g Zn / g Au	12.21
Safety Factor	%	50
Calculated Zinc Addition	kg/t	0.65
Lead Nitrate		
Delivery Method	type	50 kg Bags of 99% $PbNO_3$
Delivery Concentration	%	99
Stoichiometric Addition	g Zn / g Au	1.22
Safety Factor	%	50
Calculated Lead Nitrate Addition	kg/t	0.06
Sulphuric Acid		
Delivery Method	type	Road Tanker of 98% H_2SO_4
Delivery Concentration	%	98
Delivery Tanker Size	t	30
Specific Gravity @ 16°C	t/m^3	1.84
Distribution Concentration	%	98
Sulphuric Acid Storage Time	days	3
Tank Capacity	m^3	5
Addition Rate	g/L	100
Diatomaceous Earth		
Delivery Method	type	Powder
Delivery Tanker Size	t	20
Delivery Strength	% m/m	100

Reagents Design	Unit	Value
Storage Capacity (Time)	days	5
Mixing Tank Capacity (Volume)	m^3	2
Diatomaceous Earth Specific Gravity	t/m^3	2
Consumption Rate	kg/t	10
Fluxes		
Borax Required	type	20 kg Bag
Borax Strength	%	40
Silica Required	type	20 kg Bag
Silica Strength	%	50
Sodium Nitrate Required	type	20 kg Bag
Sodium Nitrate Strength	%	10
Soda Ash Required	type	20 kg Bag
Soda Ash Strength	%	15

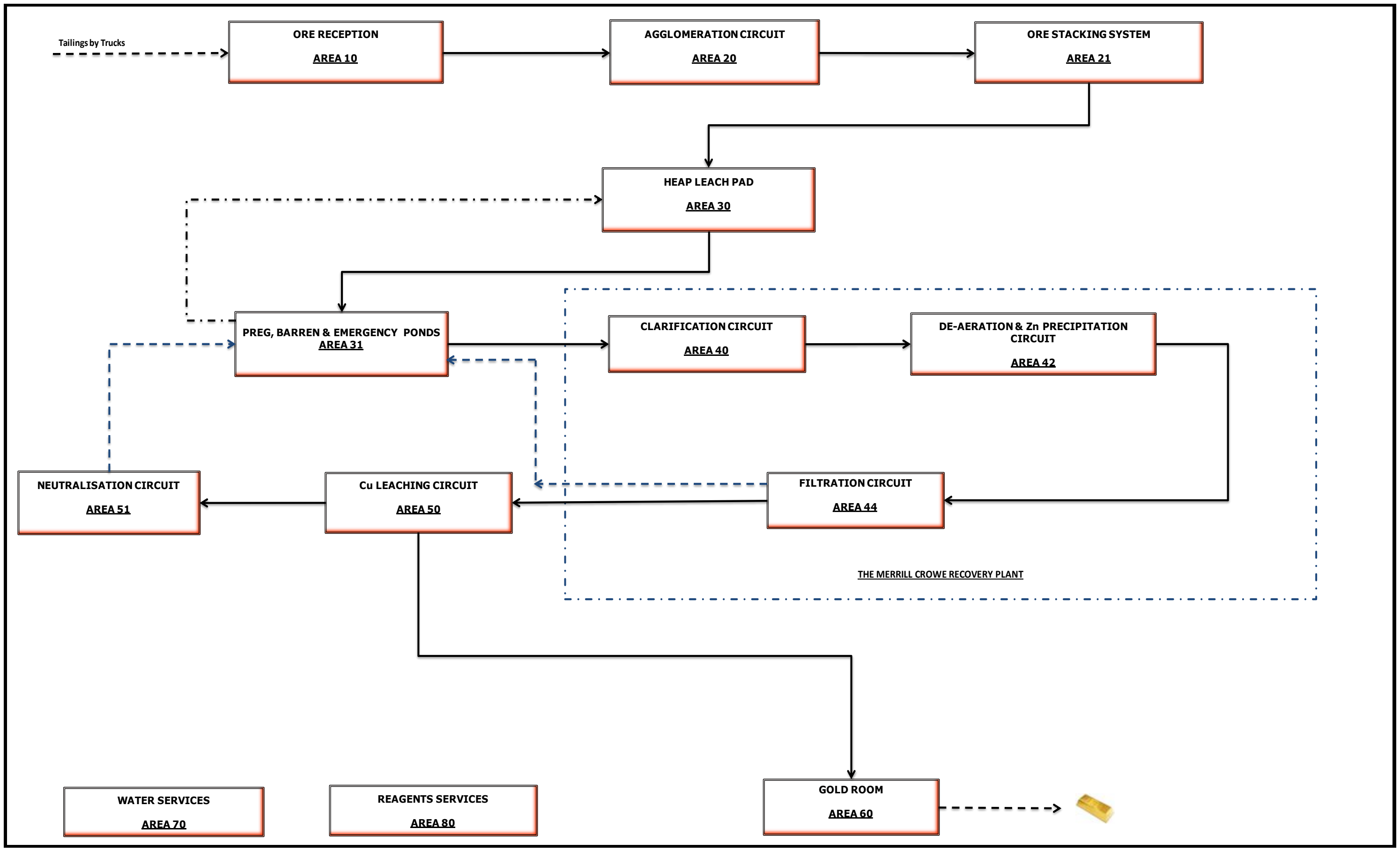
17.4 Process Background

The Plant is located in Parral, Mexico 220 km from the state capital city of Chihuahua. The Plant is to retreat old tailings from 3 zones (Zone 1, Zone 2A and Zone 2B respectively). The tailings dump was produced from the Mina la Prieta silver and base metal mine which operated periodically from the 1629 to 1975.

The Plant is designed to process a minimum of 5,000 t/d. The extraction process is by conventional HL by sodium cyanide. Recovery of gold and silver from cyanide solution is by zinc precipitation (Merrill-Crowe Process). The very high silver content of the ore makes this process more cost effective than a carbon adsorption process.

The Plant comprises of tailings reception with a temporary 9,000 t re-mined tailings stockpile, an agglomeration and stacking circuit, a HL circuit, a Merrill-Crowe plant, a copper-acid leaching and precipitation circuit. The process block flow diagram indicates the process flow design as per Figure 17.4-1.

Figure 17.4-1: Process Block Flow Diagram



17.5 Process Areas Breakdown

Table 17.5-1 below presents the designated plant area numbers and their descriptions.

Table 17.5-1: Process Flow Sheet Numbering

Area	Sheet	PFD Sheet	P&ID Sheet	Description
10	1/18	FD10100	PD10101	Ore Reception
20	2/18	FD20100	PD20101	Agglomeration Circuit
21	3/18	FD21100	PD21101	Ore Stacking Circuit
30	4/18	FD30100	PD30101	Ponds and HL Circuit
30	5/18	-	PD30201	Leach Barren Solution Irrigation
31	6/18	FD31100	PD31101	Emergency and Detox Ponds
40	7/18	FD40160	PD40101	Clarification Circuit
42	8/18	FD42100	PD42101	Deaeration and Zinc Precipitation Circuit
44	9/18	FD44100	PD44101	Precious Metal Filtration Circuit
44	10/18	FD44200	PD44201	Barren Solution Return Circuit
50	11/18	FD50100	PD50101	Copper Leaching Circuit
51	12/18	FD51100	PD51101	Neutralisation Circuit
60	13/18	FD60100	PD60101	Gold Room
70	14/18	FD70100	PD70101	Raw Water Services
71	15/18	FD71100	PD71101	Potable Water Services
80	16/18	FD80100	PD80101	Reagents 1 - Cyanide/Caustic
81	17/18	FD81100	PD81101	Reagents 2 - Sulphuric Acid
83	18/18	FD83100	PD83101	Diatomaceous Earth Services

17.6 Plant Description

17.6.1 Ore Reception: 1295-FD10100

The re-mined tailings is transported by haul trucks from the tailings dump to a temporary ore stockpile (10-STP-01). The ore stockpile has a capacity of 36 hours, ensuring that there is no disruption due to material delivery delays. A front-end loader (FEL) will be used to add material from the stockpile into a feed tipping bin (10-BIN-01). The tipping bin is designed to have a capacity of 100 t to allow for steady plant operation and possible direct tipping from trucks.

Material is drawn from the feed tipping bin by a variable speed belt feeder (10-FDB-01), which discharges material at a controlled rate onto the primary screen feed conveyor (10-CVR-01). The belt feeder operates in a feedback control loop with the mass meter (10-MMT-01) on this conveyor, to control the feed rate by automatically varying the speed of the belt feeder.

The mass meter on the primary screen feed conveyor measures and records the instantaneous tonnage through the plant, as well as the totalised tonnage processed. The mass meter is used for both process control and material accounting.

A tramp magnet (10-MGT-01) is installed over the primary screen feed conveyor for removal of tramp metal that would potentially damage equipment in the plant.

The primary screen (10-SCR-01) is a single deck screen equipped with a 25 mm aperture sizing deck. The primary screen is required to ensure removal of any unwanted waste material and large size particles. The primary screen oversize gravitates into the primary screen oversize bunker (10-BNK-01) for waste collection and removal. The primary screen undersize material passes onto a mixing belt (20-CVR-01) for further processing.

A dust suppression unit (10-DSP-01) is installed in the ore reception area to control dust at the ore stockpile and transfer points.

17.6.2 Agglomeration Circuit: 1295-FD20100

The agglomeration circuit comprises of cement and lime addition systems (lime addition will be installed only if required), a mixing belt and agglomeration drum (20-AAG-01). The cement addition rate (15 kg/t) is controlled by a variable speed rotary valve and a screw feeder (20-FDS-01). Cement is added as a binder for the fine tailings, providing adequate agglomerating strength and permeability of material and allowing a high flow of leach solution through the heap. Cement also provides sufficient protective alkalinity during leaching to maintain a leaching solution pH of 11.

The combination of material with cement is mixed on a mixing conveyor belt (20-CVR-01) and reports to the agglomeration drum by conveyor (20-CVR-02). The agglomeration drum agglomerates the material at a rate of 250 t/h. Inside the drum, the mixture is dampened to 18% moisture by adding barren solution. The flexibility exists to add cyanide solution to the agglomeration drum if required. During agglomeration, clay and fine particles contained in the material adhere to the coarser particles and create a coating of fines around these particles. On discharge from the drum, the agglomerated ore is conveyed to an impervious leaching pad.

17.6.3 Ore Stacking Circuit: 1295-FD21100

The agglomerated material is conveyed to a series of grasshopper conveyors (21-CVR-03-24) using a transfer conveyors (21-CVR-01-02). Each mobile grasshopper conveyor is 750 m wide by 30 m long and will be positioned to suit the relevant HL cell under construction at the time.

The grasshopper conveyors feed a 600 m wide by 16.5 m long radial arm stacker (21-CST-01). The stacker has a working radius of 75 m stack width and 10 m stacking height with the stinger retracted. Material will be stacked and allowed to cure for 48 hours prior to cyanide irrigation.

17.6.4 Ponds and HL Circuit: 1295-FD30100 & FD31100

Sodium cyanide solution is used as a leachate to irrigate the heap which is leached for 60 days. The leachate is applied to the heap using a drip irrigation method, due to site climate condition. Due to low rainfall in the area, this method minimises evaporation of solution in the system. The drip system employs a network of plastic pipes containing emitters. Testwork indicates an irrigation rate of 10 L/m^2/h. Gold, silver, copper and other metals contained in the ore are dissolved to various degrees by the sodium cyanide solution as it percolates down through the stacked ore and collects at the bottom of the heap as pregnant leach solution (PLS).

The PLS is directed to a pregnant pond prior to the metal recovery plant. The HL area has 4 main solution ponds namely a pregnant pond (30-PND-01), barren pond (30-PND-02), emergency pond (31-PND-01) and release pond (31-PND-02).

Cyanide is added to the barren solution from the recovery plant via the irrigation pumps suction lines before the solution is passed through a sand filtering circuit (30-FIL-01-3) and onto the HL pad using variable speed pumps (30-PMP-01/2).

Barren solution is also pumped (30-PMP-03/4) to the recovery plant where it will be used as dilution and make-up water. The PLS is pumped, using pumps (30-PMP-05/6), to the Merrill Crowe circuit for metal extraction. All pumps in this area have a self-priming facility

The emergency pond is designed to handle the excess runoff water from the HL. The emergency pond is designed to store the accumulated excess solution during rainy season and returned to plant during the dry season. In extreme rain conditions the emergency pond overflows to a detoxification step to destroy excess cyanide, using hydrogen peroxide and sulphuric acid as the detoxification method in the release pond. A pump (31-PMP-01) has been provided to recover excess solution from the emergency pond back to the HL circuit via the barren pond.

17.6.5 The Merrill-Crowe Circuit

The precious metal recovery circuit is designed based on the conventional Merrill-Crowe process followed by copper acid leaching and neutralisation circuits. The recovery circuit includes the following process areas:

- Clarification and deaeration of the solution
- Addition of metallic zinc powder for silver and gold precipitation
- Filtration of precious metal from the resultant barren solution.

The above processes are discussed in the subsequent sections.

Clarification Circuit: 1295-FD40100

The clarification circuit comprises of 2 pre-coated type pressure filters (40-FTP-01/02) and associated solution transfer pumps, area spillage containment and filter cake handling system.

The PLS from the pregnant leach pond is pumped through 3 clarifying filters to reduce suspended solids prior to zinc addition. The filter elements are covered with polypropylene cloth, which is pre-coated with a layer of fine silica (diatomaceous earth) to create a bed of filter media to trap very fine particles.

The PLS is pumped through the filter channel into all filter chambers at the same time until they are filled. The filter cake build-up starts when the filtrate is pressed through the cloth by newly fed solution. The filtrate is discharged via the collecting channels.

At the end of the filtration cycle, the filter is drained along with filtered solids which slump by gravity from the filter cloths into the settlement pond (40-SNT-01). The filter cloths are washed with barren solution to remove any filter cake material that may stick to the cloths. Upon completion of the wash cycle, the filter is put back online and the pre-coating process initiated. Thereafter, the PLS is introduced to begin a new filtering cycle.

The unwanted solids in the settlement pond are removed via FEL and returned to the prepared HL cell.

Spillage collected in this area is pumped back to the pregnant pond using a submersible pump (40-PMP-03), or alternatively into the settlement pond if it is not PLS. The clarified solution will report to the deaeration and zinc precipitation circuit.

Deaeration and Zinc Precipitation: 1295-FD42100

The deaeration of clarified PLS is accomplished by using a packed tower under vacuum. Clarified solution from the clarifying filters is pumped to the top of the deaeration tower (42-DEA-01) where the solution is distributed over a bed of packing, which provides surface area for thin film formation and release of dissolved oxygen.

A vacuum pump (42-VCP-01) is used to reduce the pressure within the vessel. Evolved gases, including oxygen, are exhausted through the vacuum pump. Deaerated solution discharges from the tower by gravity into the zinc mixing system (42-TNK-01).

The zinc precipitation circuit comprises of a zinc powder storage bin (42-BIN-01), variable speed drive (VSD) belt feeder with mass meter, mixing cone (42-TNK-01) and precipitate pumps (42-PMP-01/2), area spillage containment, a safety shower and lifting hoist.

Zinc powder is metered into the deaerated PLS using a VSD belt feeder. Zinc powder is fed into a mixing cone containing cyanide solution, which is positioned above the suction of the precipitate filter press feed pumps. The zinc addition rate is calculated as the stoichiometric amount of zinc required to precipitate the precious and base metals in solution plus an excess amount. The following principal chemical reactions take place during the process:

$$2Na_2Au(CN)_2 + Zn = 2Au + Na_4Zn(CN)_4$$

$$Na_3Ag(CN)_4 + Zn = Ag + Na_3Zn(CN)_4$$

$$Na_3Cu(CN)_4 + Zn = Cu + Na_3Zn(CN)_4$$

Zinc has a higher affinity to the cyanide ion than gold, promoting gold along with silver and copper to precipitate. The cementation reaction occurs very rapidly and sufficient retention time is available for the reaction to take place in the pipeline between the filter press feed pumps and the precipitate filter presses (44-FTP-01/2/3). The key consideration in the design of the filter press feed pumps is the prevention of air ingress. Leakage of air through the pump shaft seal may allow oxygen to enter the system.

In addition to cyanide, lead nitrate is added to the zinc mixing chamber to aid in the recovery of gold precipitate by preventing zinc passivation.

Precious Metal Filtration Circuit: 1295-FD44100

The filtration of the silver-gold-copper precipitate is accomplished by 3 plate and frame type filters (44-FTP-01/2/3) installed in series. The filters are fed continuously until the pressure differential reaches the maximum recommended operating level or should the flow decrease to unacceptable levels. At the end of the filtration cycle, the filter is taken offline and drained. The press is opened and the filter cake drops on top of the dedicated filter cake discharge conveyor (44-CVR-01/2/3). The collected cake from the conveyor gravitates into copper leach tank. The clear solution referred to as barren solution gravitates into a transfer tank (44-TNK-01) and pumped back to the barren pond.

17.6.6 Copper Leaching Circuit: 1295-FD50100

The copper leaching circuit is a batch operation which is located inside the gold room for security reasons. The circuit comprises of an agitated stainless steel conical tank (50-TNK-01) as a reactor with a fume extraction fan (50-FAN-01), circulation pumps (50-PMP-01/2), air blowers (50-BLW-01/2), a plate and frame filter press (50-FTP-01) and a dedicated safety shower (50-SSH-01). The intention of this circuit is to dissolve all copper contained in the precipitated metals using strong sulphuric acid.

The slurry is circulated until the copper is completely dissolved. The gold-silver precipitate is then filtered out of the solution and discharges onto a tray. The clear copper sulphate solution from the filter gravitates to the neutralisation and copper precipitation circuit.

17.6.7 Neutralisation and Copper Precipitation Circuit: 1295-FD51100

The neutralisation and copper precipitation circuit is also a batch operation consisting of 2 agitated neutralisation tanks (51-TNK-01/2) to ensure adequate reaction time, circulation pumps (51-PMP-01/2), a plate and frame type filter press (51-FTP-01) and barren solution return pumps (51-PMP-03/4).

The circuit serves 2 process purposes, namely: to raise the barren solution pH to between 9 and 10 and to precipitate saleable copper out of the solution. The clear solution from the copper leaching circuit is mixed with caustic solution. During the reaction, the copper sulphate solution reacts with caustic to produce a copper hydroxide solid and sodium sulphate solution as shown in the following chemical equation:

$$CuSO_4 \quad + \quad 2NaOH \quad = \quad Cu(OH)_2 \quad + \quad Na_2SO_4$$

During the process, the mixed solution is circulated through the filter and back to the neutralisation tank until a clear solution is achieved. Thereafter, the filter is bypassed while the cake (copper hydroxide solids) is being removed and dropped down into the copper storage bunker (51-BNK-01). Once the filter cake has been removed and the filter washed, the feed process can commence until the entire batch is processed. The clear solution from the filter gravitates into the barren solution return tank (51-TNK-03) and pumped back to the barren pond. A sample of the barren return stream will be taken to monitor the pH and metal content.

17.6.8 Gold Room: 1295-FD60100

The silver-gold cake is dried in a calcine oven (60-CCF-01). The calcine is then smelted with fluxes into silver-gold doré bullion using the smelting furnace (60-SMF-01). Provision is made for the storage and weighing of fluxes in the gold room. Bullion bars are cleaned, weighed and stamped before storage in the strong room, prior to despatch.

A 16 mm thick steel plate is cast into the gold room floor in front of the smelting furnace to allow bullion moulds to be tipped out without damaging the concrete floor.

The smelting furnace is covered by a fume hood (60-HOD-01) to collect high value dust emitted during a smelt. The gold room is housed in a secure brick building with restricted.

A single 6-tray calcine oven is installed to provide standby capacity, secure storage capacity and to allow the concentrate to be dried.

Digital electronic scales are provided for weighing fluxes (flux scale (60-MMT-03)) and doré bullion bars (bullion scale (60-MMT-01/4)) and bullion sample prills (prill scale (60-MMT-02)).

17.6.9 Water Services

Raw Water: 1295-FD70100

Raw water is supplied from the local municipal water system to feed a raw water tank (70-TNK-01). This tank is also designed to be used as a source of fire water. Fire water is drawn from the lowest level of the tank to ensure that there is always supply. Fire water is distributed to the designated areas of the plant via fire water supply pumps (70-PMP-03/4/5). The plant raw water is used for all major reagents make-up requirements and to top up the barren pond.

Potable Water: 1295-FD71100

Potable water is supplied from the local municipality water system to feed a potable water tank (71-TNK-01). Potable water is pumped to the various safety shower points in the plant and the buildings by the potable water pumps (71-PMP-01/2).

17.6.10 Reagents Services

Cyanide Plant: 1295-FD80100

Sodium cyanide will be delivered to site in 1 t bulk bags. During the make-up of cyanide, the cyanide bag will be hoisted to the top of the mechanically agitated sodium cyanide mixing tank (80-TNK-02) by means of an electric hoist (80-HST-01) and placed into the bag breaker (80-BRK-01). The bag breaker will cut the bulk bag, discharging the cyanide solids into the sodium cyanide mixing tank while it is being filled with barren solution or raw water. The cyanide mixer (80-AGT-02) starts to dissolve the briquettes to make up a 25% solution of sodium cyanide.

On completion of dissolution, the cyanide solution is pumped to the cyanide dosing tank (80-TNK-01) by the cyanide transfer pump (80-PMP-03). Sodium cyanide solution is dosed to the barren pond from the cyanide storage tank using either of the 2 cyanide dosing pumps (80-PMP-01/2). Provision has been made to pump sodium cyanide solution to the zinc mixing system and the agglomeration drum if required.

Cyanide spillage is collected in a bunded area and pumped back to the cyanide mixing tank by the cyanide spillage pump (80-PMP-04).

Caustic Plant: 1295-FD80100

Caustic soda pearls or flakes are received in 25 kg bags, which are mixed to a solution of 25% strength in the caustic mixing tank (80-TNK-03). The tank also serves as a storage tank, with dosing to the neutralisation circuit using the caustic pump (80-PMP-05/6). The caustic and cyanide tanks are located in an interconnected bunded area.

Safety showers (80-SSH-01/2) are provided at the cyanide and caustic make-up areas, storage and offloading facilities. Cyanide make-up safety shower 1 (80-SSH-01) is located at floor level near the cyanide mixing tank (80-TNK-02) and caustic make-up safety shower 2 (80-SSH-01/2) is located next to the caustic storage tank, close to the caustic pump (80-PMP-05/6).

Electric hoist is provided for both cyanide and caustic make-up to lift the regents into the respective mixing tanks.

Sulphuric Acid Plant: 1295-FD81100

Sulphuric acid will be supplied to site by a 30 t road tanker and off-loaded into a sulphuric acid storage tank (81-TNK-01) using pumps (81-PMP-04/5). Sulphuric acid is used as a leachate during the copper dissolution process, maintaining the required low pH. Sulphuric acid is also dosed, if required, into the detoxification plant together with hydrogen peroxide.

Diatomaceous Earth Plant: 1295-FD83100

The diatomaceous earth plant system consists of a pre-coat mixing tank (83-TNK-01) and circulation pumps (83-PMP-01/2). The appropriate amount of diatomaceous earth is added to the pre-coat mixing tank and slurry is then circulated in a closed loop through the filter press until the returning solution becomes clear. A differential pressure on the filter is maintained so that the layer of pre-coat will remain in place. If the differential pressure is lost across the filter the diatomaceous earth will fall to the bottom of the vessel and the process must be repeated.

17.7 Process Plant Opportunities

17.7.1 Process Route

The sulphidation, acidification, recycle and thickening (SART) process may offer an opportunity as an alternative approach to dealing with the copper content of the leach solution. At present it is proposed to leach the copper from the zinc precipitate with sulphuric acid, leaving the gold and silver as a precious metal sludge that will be filtered and smelted to bullion. The copper sulphate solution will be neutralised with caustic to precipitate copper hydroxide.

The SART process precipitates copper from the leach solution as copper sulphide which is readily processed in existing copper smelters. This process also regenerates a significant proportion of the associated cyanide with a resultant reduction in the consumption of the costly sodium cyanide. A significant proportion of the sliver is also expected to co-precipitate with the copper and it will be important to quantify this with test work and evaluate the smelter return for the contained silver. Silver is the predominant revenue provider.

17.7.2 Capacity Increase

The throughput of the process plant should be capable of up to a 20% increase with a modest additional capital cost. The following are the key considerations for a capacity increase:

- The agglomeration drum is considered to be conservatively sized for the duty. Once the operating skills for this critical process step have been well developed, an increase in throughput should be achievable
- The stacking, leach pads and solution pumping should all be readily upgraded with minimal cost
- The clarification filters could be designed to accommodate additional filter plates to increase throughput

- The precious metal filters could similarly be designed to receive additional filter plates
- The subsequent process are all batched and the frequency of batch processes can be readily increased.

17.8 SAFETY AND RISK ASSESSMENT

17.8.1 Occupational Health and Safety

The Occupational Health and Safety (H&S) system is a 5-stage proactive system:

- Risk and impact assessments
- First aid and occupational health service facilities
- Medical services
- Training
- Inspection and action

These stages are described in more detail in the following sections.

17.8.2 Risk and Impact Assessments

Statement of Objectives

To identify and assess H&S risks through a dynamic, formal, structured and holistic process to facilitate effective risk reduction. As GoGold has not yet established formal mining safety controls, the South African Mine Health and Safety Act (29) of 1996 has been used as a reference in drawing up standards and systems for mine health and safety for the Project.

General Requirements

- There is a systematic approach and standard procedure on all work sites to identify and assess risks and the impact thereof
- The applicable site H&S practitioner is alerted to planned process activation and modifications. An assessment team is then established for that specific task. All tasks are assessed, incident preventive measures are initiated before the activity starts and the H&S impacts are discussed with all the applicable employees working on that job
- All applicable parties are involved in the assessment process
- All applicable assessments are reviewed annually
- Assessments include all significant activities, covering the full scope of responsibility and accountability of the operations and include the activities of all sub-contractors
- Employees are competent to evaluate and identify risks related to a specific task / function
- Assessments are carried out before operation and before changes / modifications are done
- Normal, abnormal and potential conditions, throughout the process cycle, are taken into consideration when assessing risks
- Biannual surveys are carried out by appropriately qualified / accredited personnel and if major modifications / new installations are added; steps are taken to identify and control new arising risks.

These surveys include:

A – Health Risk Analyses

A1 - Chemical stress

- The survey identifies hazards related to vapours, gases, mist and dust
- Toxicity of substances is determined
- Toxicological effects of all substances are identified
- Absorption factors are included.

A2 - Psychological stress

- In areas where extreme concentration is required.

A3 - Physical stress

Noise:

- Noise surveys are conducted in all work areas
- Noise zones are identified and indicated by means of symbolic signs.

Lighting and vision:

- Light surveys are conducted in all work areas
- Surveys include all work areas, tasks and conditions
- Inadequate lighting is assessed and actioned
- Occupational hazards involving vision and visibility are identified.

Heat and cold extremes:

- Areas above wet bulb globe temperature (WBGT) index 30 (degrees Celsius) are identified
- Cold stress areas are identified
- Areas likely to inflict cryogenic burns are identified.

Vibration:

- Potential hazards are determined
- Vibration effects are identified
- Exposure to vibration is identified.

Ventilation:

- Natural ventilation is sufficient where adequate mechanical ventilation is installed
- Local exhaust ventilation is adequate
- All mechanical ventilation systems are on a maintenance programme.

Non-ionising radiation:

- Processes utilising non-ionising radiation are identified
- Health risks pertaining to non-ionising radiation are identified
- Where applicable a non-ionising programme is in place
- Exposure to excessive sunlight is identified and actioned.

Ionising radiation:

- Ionising hazards are identified

A4 – Biological stress

- Occupational hazards involving bacteria, viruses, fungus and parasites are identified.

A5 – Ergonomical stress

- Man / machine activities are assessed
- Appropriate checklists are used
- Observations are done while the task is in process
- Detailed analysis is done on hazardous tasks
- Impacts are reported and actioned
- A multi-disciplinary team compiles remedial action plans
- Health and safety risk tasks are assessed
- Workstation and workplace designs are ergonomically sound
- Workflow design and environmental conditions are adequate
- The posture, actions and movement required for manual handling are not causing a risk
- The shape, size, weight and nature of objects are assessed beforehand
- The transportation distances of manual handling are taken into consideration
- The handlers' age and general state of health is assessed
- A study of energy consumption demands is carried out where applicable.

A6 – Risk identification and evaluation

- Risk assessments carried out take full cognisance of material safety data sheet (MSDS) data, survey results, medical information and general complaints
- Occupational Health experiences are included in assessments of existing processes, new processes and modifications, pre-commissioning, new plant hand over and JSA and WSWP studies.

A7 – Occupational hygiene surveys

- The survey is done by an appropriately qualified hygienist / organisation
- Surveys are conducted according to legal requirements and methodologies
- All instrumentation complies with regulated standards
- Survey reports are circulated to all relevant parties
- Appropriate laboratories are used to analyse samples.

17.9 PROJECT IMPLEMENTATION

17.9.1 Introduction

The aim of this section is to outline the implementation plan for the successful execution of the proposed HL processing plant and associated infrastructure at the Project site.

Nature of Implementation

The nature of the implementation plan is driven by the Project site location, the prevalent weather conditions, the regulations governing construction in Mexico and the anticipated efficiency levels of the construction teams. The most cost effective type approach in the current market conditions would be for a reimbursable type contract with a main contractor responsible for the overall project design and management, with turnkey packages for the major equipment supply, civil construction, structural steel and plate work fabrication, power supply and transportation of goods to site.

Assumptions

This study is based on the most practical and cost effective method of project execution. The main contractor, using local sub-contractors and labour as much as possible, will supervise the design and construction of the plant. The mine infrastructure construction will be carried out by local, or Mexican, contractors but will be supervised by the main contractor. All civil excavation and civil construction work will be done using local contractors employing local labour all supervised by the main contractor. All fabrication of steelwork and plate work will be carried out by local fabricators and labour, working under the supervision of the main contractor. All erection work will be carried out under the supervision of the main contractor. Included in the supervisory team will be quality control (as provided by local qualified persons) and expediting personnel, who will ensure that fabrication schedules and quality of work are acceptable to the Project. Tools and equipment will be provided locally to carry out the construction work as required and will be supplemented by hired heavy equipment where deemed necessary.

The main contractor will be responsible for contracting with all local sub-contractors. These include the following:

- Bulk earthworks contractor
- Civil construction contractor
- Fabrication contractor
- Erection contractor
- Structural, mechanical, plate work and piping (SMPP) contractor
- Electrical and control and instrumentation (C&I) contractor

Critical Drivers and Fast Tracking

The following are the critical drivers influencing the implementation plan of the Project:

There will be front-end activities required for confirmation of PFS data, before any physical work can be done and these include:

- Permitting as required
- Appointment of the main and sub-contractors
- Refining the cost estimated to an accuracy of 10%
- Orders must be placed according to the project programme to ensure that the standby power generation-set, min-subs and construction craneage arrive on site prior to the commencement of construction.

Project Phases

In order to plan this project the execution programme has been divided into 2 phases. Phase 1 being the front end engineering design (FEED) or early works phase and Phase 2 being the construction execution and commissioning phase.

Phase 1 – Award of Reimbursable Contract

This phase will include the detail design of the plant and infrastructure, coupled with the approvals as required by the Mexican authorities. This phase is to be completed by mid-May 2013. This period will encompass the design optimisation coupled with in-country sourcing and ratification of suppliers who will be requested to submit fixed and firm prices for the various pieces of equipment. Identification and procurement of long lead items will also take place during this period.

Phase 2 - Construction Execution

This phase is the physical construction of the plant and infrastructure and, funding permitting, the main works will start in mid-May 2013. All construction activities will be in accordance with the attached construction programme.

Further critical drivers influencing the implementation are as follows:

- The excavation and construction capabilities of the civil contractors
- Procurement of long lead mechanical equipment especially the agglomerator, stacker and grasshopper conveyors (as procured in Phase 1)
- Approval of environmental permit for construction and operations.

Construction Strategy

The major milestones for the completion of the project are as follows:

- Detail design complete by mid-May 2013
- Commence plant civil works in May 2013
- Erect sufficient buildings to allow for efficient construction activities.

17.9.2 Project Management

The Project will be executed on a functional matrix basis, with resource allocation dictated by the Project requirements. To facilitate this, a functional Project structure will be implemented, based on separating the process plant from the infrastructure.

Project Director

Responsible for the strategic project planning and management of the project, contract negotiations, and dispute resolution on an executive level.

Project Sponsor

Responsible for reviews, as well as input into the execution process to enable the smooth transfer from the PFS and basic engineering phases to the execution phase.

Engineering Manager

Responsible for the overall project design, both in the structural and civil design office as well as all aspects of drawing office design and detail. The engineering manager will be the primary client liaison representative for design based issues.

Process Manager

Responsible for the overall process design; also responsible for any major equipment selection and or specification. The process manager will be the primary client liaison representative for process design based issues.

Project Manager

The project manager will be responsible for the overall project and construction management, as well as discipline co-ordination during the execution of the Project. Also responsible for any major sub-contract award and day-to-day dispute resolution. The project manager will be the primary client liaison representative.

Project Manager – Office Based

The office based project manager will be an expatriate based in the offices of the main contractor and is responsible for:

- Co-ordination of discipline functions
- Enquiry and specification preparation
- Tender adjudication and procurement
- Co-ordination and subcontractor interface and communication

- Ensuring that the plant portion of the project proceeds according to the project schedule including management of the expediting and logistics functions
- Quality control
- Resolving technical queries
- All technical aspects of the design and will oversee the quality and correctness of drawings produced from the drawing office.

<u>Project Manager – On-site</u>

The on-site project manager will be engaged locally and is responsible for:

- Co-ordination of discipline functions
- Enquiry and specification preparation
- Subcontractor negotiations and adjudication
- Subcontractor management and communications
- Ensuring that the infrastructure portion of the project proceeds according to the project schedule, including cost control
- Site involvement, quality control and adherence to specifications
- Resolving technical queries
- All technical aspects of the design and will oversee the quality and correctness of drawings produced from the drawing office

<u>Senior Process Engineer</u>

The senior process engineer will be responsible for the detailed process design and will report to the process manager. This person will specifically verify, and be responsible for the compilation of:

- Process flow diagrams (PFDs)
- Piping and instrumentation diagrams (P&IDs)
- Mechanical equipment lists (MEL)
- Process description
- Control philosophy
- Operating manual, as well as all client and subcontractor / supplier interfacing concerning process related issues
- Commissioning.

Structural Design Engineers – Civil and Structural

The discipline engineers will be responsible for the detailed civil and structural design and will report to the engineering manager. All civil design will conform to the South African Bureau of Standards SANS 1200. All structural steel design will conform to the South African Bureau of Standards SANS 10162. All piping design will conform to the South African Bureau of Standards SANS 62 and SANS 719.

Responsibilities of the engineers will be:

- Civil design for all aspects of the plant and infrastructure
- Structural design for all aspects of the plant and Infrastructure
- Liaison with the drawing office personnel with respect to correct interpretation of the design.

Electrical, C&I Manager

Will be responsible for all aspects of the electrical, C&I design and installation.

Design Engineers – Electrical, C&I

Will be responsible for the detailed electrical and C&I design for all aspects of the plant and infrastructure specifically:

- Electrical design high tension (HT) and low tension (LT)
- Programmable logic controller (PLC) design
- Electrical, C&I supply adjudications
- Construction supervision
- Commissioning.

Drawing Office Manager

Will be responsible for the day-to-day running and co-ordination of the drawing office, and the management and information flow to the following sections:

- Layouts
- Civil
- Steelwork
- Plate work
- Conveyors
- Piping and valves.

Support Services

The support services utilised, are as follows:

- Procurement

- Expediting
- Planning
- Project accounting
- Cost control
- Document control
- Secretarial.

17.9.3 Construction

Construction Management and Reporting

The construction management is run on the same basis as the engineering and design. The key players and their functions are as follows:

Site Manager

The site manager reports directly to the project manager, and has the following responsibilities:

- Primary interface between head office, the client and site personnel
- Overall responsibility for the construction and adherence to the programme
- Ensure efficient and effective community interface and liaison
- Responsible for the costs associated with management of the site

The site manager will be assisted in his duties by the following support staff:

- The safety manager, who will ensure that safety on site is paramount, and will be responsible for management of the safety functions for the appointed subcontractors. He will ensure that all workers and subcontractors adhere to the MDM H&S policy. Furthermore the safety manager will handle security

- Administration and human resources manager (head office)
- As material supply and site control is of prime importance, a material controller will be used to ensure the proper management of material receipts, storage and issue.

Construction Superintendent - Process Plant

The construction superintendent for the process plant, reports directly to the site manager, and takes overall responsibility for the construction of the process plant.

The following senior supervisory personnel will be used to manage the separate construction functions:

- Civil
- Tanks
- Rigging
- Electrical
- C&I
- Mechanicals
- Piping.

Commissioning Manager

The commissioning manager will be responsible for all on site plant commissioning, both commissioning to practical completion (dry commissioning) and commissioning of the plant with ore (wet commissioning). The commissioning manager will be responsible for the plant operational schedules and will issue area practical completion certificates to GoGold personnel prior to the areas being deemed ready for wet commissioning. MDM will encourage and assist GoGold plant operators to be involved with the commissioning of the plant.

Building Supervisor - Infrastructure

The building supervisor for the infrastructure, reports directly to the site manager, and takes overall responsibility for the construction of the infrastructure.

The following senior supervisory personnel will be used to manage the separate construction functions:

- Civil
- Building
- Water
- Sewerage
- Electrical.

Local skilled, semi-skilled and unskilled labour will be sourced from the local area. Only if sufficient labour is not available in this region will skilled labour be sourced from further afield.

QA/QC

The QA will be the responsibility of the contractor subcontracted to do the works. QC will be the responsibility of the supervisor in charge, with the ultimate responsibility being that of the site manager.

Working Philosophy

The following philosophy has been adopted:

- All local construction personnel will work as required by the main contractor, which will be in accordance with local labour laws

- The expatriate staff and supervisors will work a nominal 10-hour 6-day week. Expatriate staff will work a rotation-based schedule of 10 weeks on and 2 weeks off

- A disciplinary code with dismissal procedures will be implemented.

Construction Equipment and Temporary Works

All construction equipment and temporary works required for the execution of the contract have been allowed for apart from the following:

- It is assumed that a suitable mobile crane, which will be used for plant maintenance, be procured, transported and established on site before the commencement of construction. This crane will be made available, free issue, to the construction contractor.

- Personnel vehicles that will be used for operational purposes will be made available to the main contractor during the construction period. The cost for this equipment is included in the owner's costs. GoGold will be responsible for all running and maintenance costs during the construction period. These costs have been included in the CAPEX estimate. The construction contractor will be responsible for his own equipment and vehicles on site.

17.9.4 Project Controls

The following project controls will be implemented:

- Weekly internal project meetings will be held to review progress, and to ensure that all the team members are fully informed, as well as to create a forum for interaction and information flow

- Weekly progress updates, showing actual progress against planned progress

- Monthly meeting with GoGold or their appointed representative
- Cost control and invoicing according to the agreed cash flow schedule, and according to the contractual requirements.

Monthly Reporting

The monthly progress reports shall have the following format:

Executive summary

This will contain a brief summary of the content of the monthly report by the project manager. Technical matters requiring attention shall be mentioned as well as items of concern. Proposed strategies to eliminate or alleviate unfavourable trends shall be described. The likely cost and schedule outcomes and variations from plan shall be stated.

Progress review

This will cover the following items.

- Project organisation

  This will detail the status of construction personnel assigned, and to be assigned, to the project and safety statistics.

- Engineering

  Each engineering discipline will provide a status report, in bullet form, detailing project progress. This report will describe the accomplishments during the past month and objectives for the next month.

- Procurement

  The procurement manager will produce a concise report, in bullet form, on the status of the procurement, describing accomplishments during the past month and objectives for the next month.

- Construction

  The construction manager will produce a concise report, in bullet form, on the status of construction, describing accomplishments during the past month and objectives for the next month.

- Areas of concern

  A more detailed description of items of concern to the project team as well as proposed strategies either to remove them or to minimise their subsequent affect.

- Look ahead

  Shows a detailed description of the tasks to be undertaken in the following month. Items requiring the client's attention shall be mentioned.

- Commissioning

  During commissioning, the commissioning manager will produce a concise bi-weekly report, in bullet form, on the status of commissioning, describing accomplishments and objectives for the next fortnight.

Annexure to the month end report

- Project master schedule indicating progress against the baseline plan
- Potential variations from plan, their status (approved, rejected or pending) as well as their cost and schedule implications

- Claim for the month date indicated as a percentage completion per discipline including original budget, approved variations and current budget
- Payments to date and predicting cash flow graph
- Project change register
- Photographs showing the status of construction progress.

17.9.5 Implementation

The key dates are summarised below.

- FEED / Early Works Phase — mid-February 2013
- Construction Phase — mid-May 2013
- Commissioning — mid-January 2014
- Project Completion — mid-March 2014

17.9.6 Critical Path Analysis

A critical path analysis of the project schedule has identified the following activities to be on the critical path of the project implementation schedule:

- Appointment of the main contractor
- Procurement of long lead items
- Site establishment of the bulk earthworks and civil construction contractor.

17.9.7 Assumptions and Exclusions

- No construction or accommodation camp is required as the Project site is located within close proximity to the main city, Parral

- It is assumed that a medical facility will become operational as part of the site establishment phase, and will be available for use by the contractor's local and expatriate staff

- The mobile crane procured for operations will be made available to the construction contractor

- The plant water and pumping facility will be available early on in the construction phase.

18 PROJECT INFRASTRUCTURE

18.1 Introduction

This section describes the services being provided to the process plant and HL pad area, including water supply (raw, potable and fire), power supply, in-plant roads, haul roads (by others) and process plant buildings. Telephone and radio communications, site office setup (including office furniture, printers, personal computers, software and stationery), transport to and from site, as well as vehicles for use on site and associated vehicle costs are to be supplied by GoGold and have been included in the owner's cost.

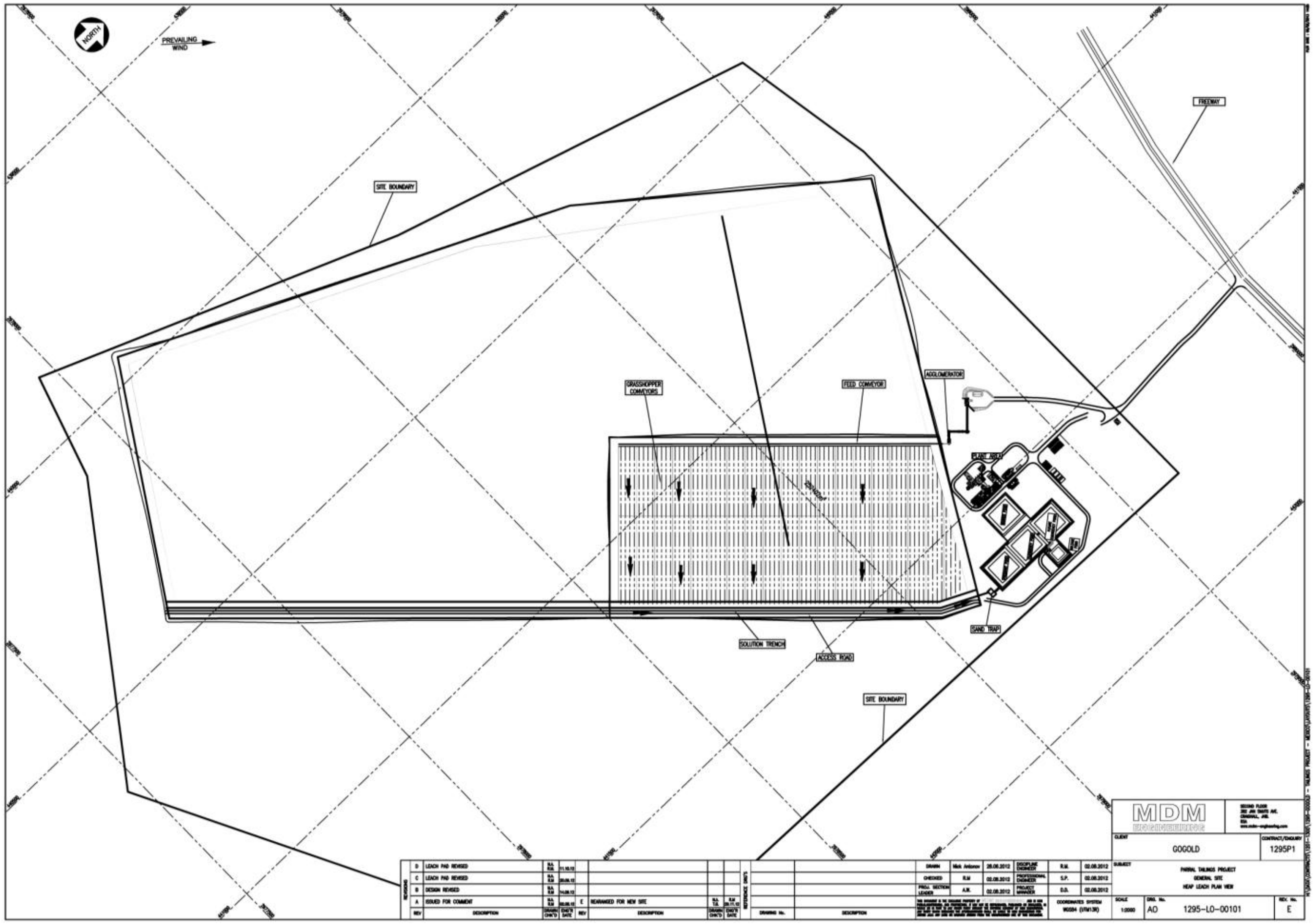
The plant site is situated approximately 240 km from the city of Chihuahua. It is readily accessible by a well-maintained paved highway and is within 10 km of the national power grid.

Generally the erection and installation of structural steel, plate work, piping and valves, mechanical equipment and electrical equipment will be done using local field labour supervised by local Mexican supervisors, as well as expatriates experienced in this work. All steelwork, plate work and piping will be fabricated locally in Mexico.

Certain Mexican companies have been identified as being capable of providing the necessary services and resources for the Project, including but not limited to civil construction, buildings and/or mobile trailers, earthworks and road works.

The HL and plant layout can be seen in the plan view as per Figure 18.1-1 below.

Figure 18.1-1: HL and Plant Plan View



18.2 Water Supply (Potable, Raw and Fire Water Systems)

18.2.1 Raw Water Supply

Maximum water usage requirements for the Project (specific to the HL pad area and process plant) is assessed as 270,000 m^3/a. The total water requirement for the Project is supplied from the local municipal water system which feeds a raw water tank used to store up to 60 m^3 of water. The plant raw water is used for all major reagents make-up requirements and to top up the barren pond when required. An allocation of 15 m^3/h is included in the raw water volume for use as dust suppression at the feed bin and primary screen.

18.2.2 Fire Water Supply

The raw water storage tank is also designed to be used as a source of fire water. Fire water is drawn from the lowest level of the tank to ensure that there is always supply.

18.2.3 Potable Water Supply

Potable water is supplied from the local municipality water system to feed a 30 m^3 potable water tank. The plant potable water is used for reagent mixing (cyanide/caustic and sulphuric acid) as well as being provided for use at various safety shower points in the plant and where required for buildings.

18.3 Electrical Power

18.3.1 Power Requirements

The power requirements for the Project can be summarised as follows:

Table 18.3.1-1: Summary of Power Requirements

Area	Unit	Value
Process Plant and Infrastructure	kVA	1,906
Connected Load (Including Standby)	kVA	1,906
Absorbed Power	kVA	1,410
Total Installed Power	kVA	2,000
Transformer Spare Capacity	kVA	590

18.3.2 Plant Power Supply

During construction and in the initial operation of the Plant, power supply will be via 3 off 1 MW diesel generators (2 operating and 1 standby). These will be purchased over a 36 month period and used as emergency / backup power once grid power is made available to the project site.

When available, power will be supplied at 45 kVA to the plant from the national power grid which is within 10 km of the plant. An overhead line will be run from the existing overhead power line to the plant site. A 45 kVA – 13.2 kV/440/254 V phase transformer will be installed in the plant main switch yard.

Power will be supplied via overhead lines to the Plant and distributed by cables in trenches and along pipe racks.

The plant motors will be supplied at 480V 60Hz.

Connected Load (Including Standby)

- This is the sum of all power users
- This includes HL stacking and conveying, agglomeration, process plant operation and plant buildings

Absorbed Power (Operating Power)

- This is the power required for plant operation and administration

Transformer Spare Capacity

- This is the calculated spare capacity available from the 45 kVA – 13.2 kV/440/254 V phase transformer.

18.3.3 Electrical Distribution

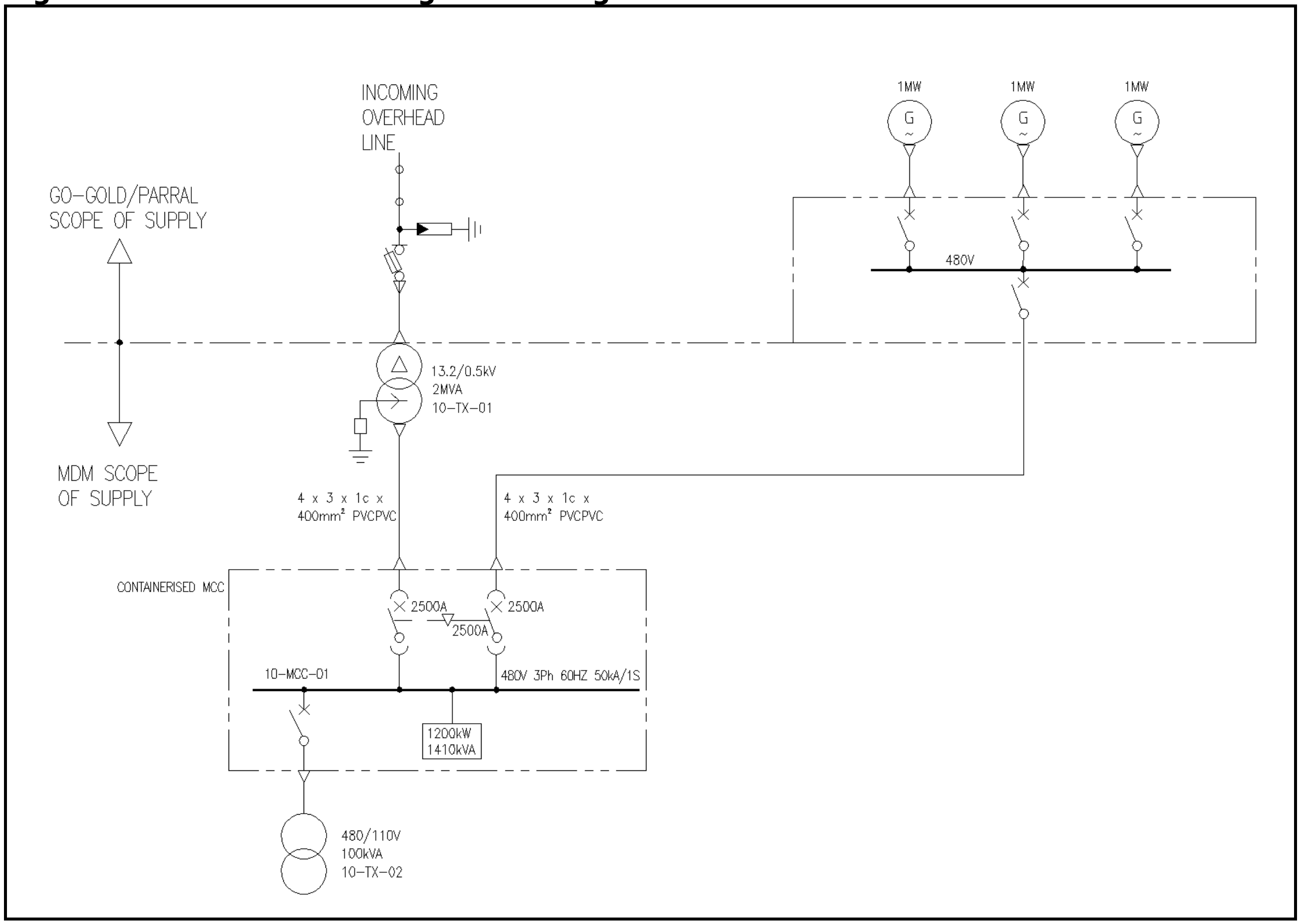
The plant will be supplied at 13.2 kV which will be transformed to 440 and 254 V. Power will be distributed to localised transformers situated at the substations which will feed 480V to the relevant MCC. Discreet input/output (I/O) will be used to provide feedback to the PLC. A PLC and supervisory control and data acquisition (SCADA) system will be provided to automatically control the plant.

Plant lighting will generally be through high pressure sodium vapour luminaires mounted on high mast poles, with bulkhead providing additional localised lighting.

Emergency lighting will be installed in the main access areas, gold room and security office.

The single line diagram (SLD) as presented in Figure 18.3.3-1 indicates the electrical distribution to the plant.

Figure 18.3.3-1: Overall Single Line Diagram



18.4 Communications

Satellite communications, telephones and in-plant communications (such as "walkie-talkies") will be provided by GoGold and have been included in the owner's cost.

18.5 Roads

18.5.1 In-plant and Access Roads

In-plant roads have been designed based on gravel roads and include the cost of erection of statutory road signs. Any access roads to the plant site outside of the plant fence are for GoGold's account.

18.5.2 Haul Road

The haulage route from the tailings dump to the HL pad and process plant has been assessed by mining sub-consultant P&E. As the majority of the route runs along the Mexican federal highway 45D, permission has been granted by the local municipal authorities to access and use the main road for daily operations. Any additional access or subsidiary roads will be constructed and priced as part of the mining operation.

18.6 Plant Buildings

The main control centre (MCC), on-site administration office, kitchen and mess facilities, medical facilities and general storage will be provided by means of mobile trailers specifically designed and built fit for purpose. All other buildings (including the security house, metallurgical laboratory, workshops, change house/ablution facilities, laundry room and stores) will be permanent brick buildings.

18.7 Transportation

Transportation of senior plant personnel to site during the Project, as well as any site vehicles, will be provided by GoGold and have been included in the owner's cost.

18.8 Fuel and Vehicle Licensing

Fuel for site vehicles and required vehicle licensing will be provided by GoGold and have been included in the owner's cost.

18.9 Security

An allowance has been made in the costing for plant perimeter fencing, fencing of the laydown area and separate fencing of high security areas identified. Also included in the allowance is security access control and closed-circuit television (CCTV) monitoring systems.

19 MARKET STUDIES AND CONTRACTS

The high silver doré production from the Project could be sold either on the spot market or under agreements with refineries. In Mexico, the Met-Mex Peñoles facility is the main precious metal refinery, located in Torreon in the State of Coahuila. There are also several refineries located in the neighbouring USA that could be easily accessed. Sales and marketing considerations will require finalisation during project execution. It is expected that any sales and refining agreements would be negotiated in line with industry norms.

20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

20.1 Introduction

The Project site is located within the town limits of Parral, in the state of Chihuahua, Mexico; specifically to the north of the city of Hidalgo del Parral. It is centred on longitude 105°40’W and latitude 26°56’N and located on the east side of the Sierra Madre Occidental mountain range, on the bordering zone of the physiographical provinces and mountains and plains from the north. This area belongs to the subtropical zone inside the northern temperate zone that stretches from the tropic of cancer to the polar arctic. Characteristically, due to never receiving directly vertical solar rays, it has a lower impact on global warming than at inferior latitudes.

In order to fully understand the characteristics and conservation grade of the Project site, environmental base line studies were carried out from January 2012 to December 2012. These studies included the physical elements of the ecosystem: superficial and underground water, soil, geology and geomorphology and climate including the ambient air quality, as well as biological studies: vegetation, flora and fauna. Social economic studies were performed for the City of Parral, Chihuahua and all small towns located inside the Project area.

The studies were performed on an area which considers the topographic elements that permit or inhibit the transportation of pollutants in order to understand the environmental impact of the Project on the selected site and the surrounding area influenced by the emissions. The size of the study area is 2,465 ha. The socioeconomic study considers the employment impact on local towns, the payment of taxes to the government and the potential population increase. The most affected town would be Hidalgo del Parral, because it is here where the benefits would be reflected and where the impacts associated with the Project would be most evident.

20.2 Physical Elements

20.2.1 Climate

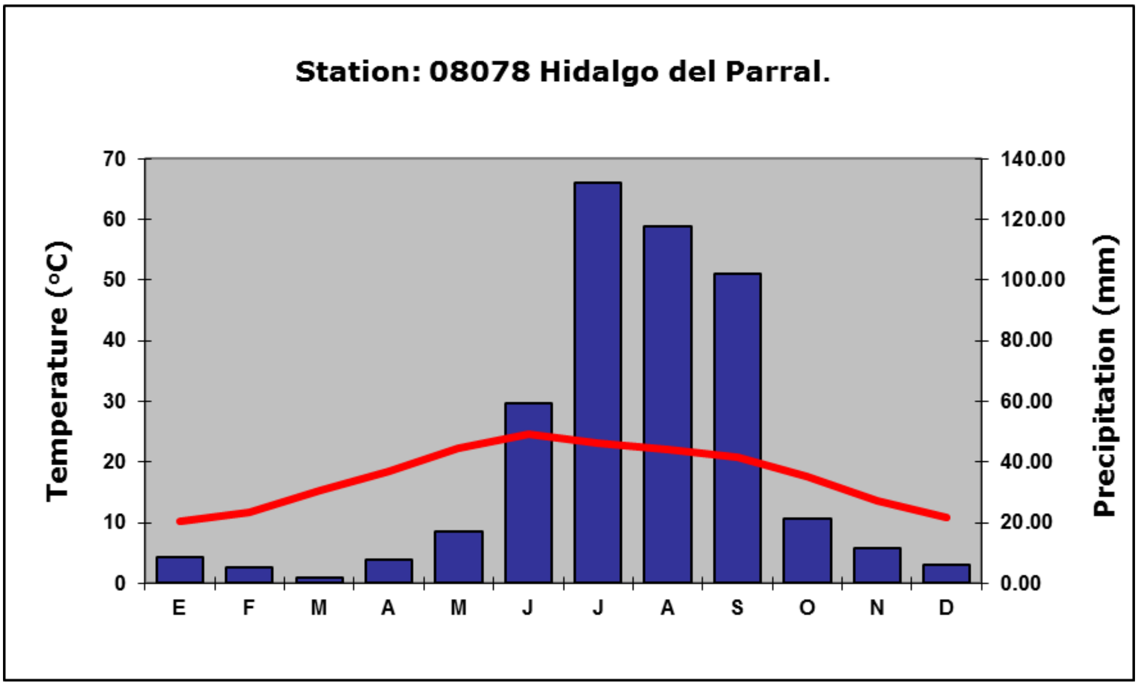
Data, provided by the National Weather Service, of the Project area indicates an annual average temperature of 17.6 °C; the warmest month corresponds to June at 24.6 °C and the coldest month to January at 10.2 °C; resulting in a thermal oscillation of 14.4 °C. The annual total precipitation is 490.5 mm, the driest month being March with as little as 1.6 mm and the wettest month being July with 132.30 mm. The following table indicates these monthly values.

Table 20.2.1-1: Station: 08078 Hidalgo del Parral, Chihuahua.

Month	**Temperature (°C)**	**Precipitation (mm)**
January	10.2	8.50
February	11.8	5.00
March	15.3	1.60
April	18.5	7.90
May	22.3	17.10
June	24.6	59.30
July	23.1	132.30
August	22	117.90
September	20.8	102.00
October	17.7	21.30
November	13.6	11.50
December	10.8	6.10
Average Temperature	**17.6 °C**	
Total Precipitation	**490.5 mm**	

The following climogram graphically presents the behaviour and the existing relationship between the temperature and the precipitation of the Project zone.

Figure 20.2.1-1: Climogram of Station 08078



Historically, the maximum average temperature is experienced in the month of June at 35.5 °C and minimum temperature in January at -1.2 °C. Other climatic conditions such as hail seldom occur, equivalent to 0.8 days/a, during the period from April to July. Fog occurs in the period from October to December, accumulating 0.5 days/a. The wind direction is from the southeast.

According to the Köppen climate classification system (Köppen system), created by the German geographer/meteorologist/climatologist/botanist Wladimir Köppen in 1936 (and later modified by Enriqueta García de Mirandato), adapted to the particular conditions of Mexico, the described variables are translated into a warm semi-dry climate with summer rainfall and a minor winter precipitation of approximately 5% and it is symbolised in such system with the characters BS1kw(w). This type of climate is consider transitional among the warm climates and the dry climates of the east plains, on the north provinces Sierras and plains and the warm sub humid from the west on the Sierra Madre Occidental.

The air quality in the study area may be affected by emissions to the atmosphere by way of industrial and service sources, vehicle sources and dust coming from unpaved roads and avenues. The air quality is considered good, as the monitoring did not prove greater than the maximum permissible limit.

20.2.2 Geology and Geomorphology

The Project is within the limits of the Sierra Madre Occidental mountain range and the north plains. The study area has average altitude of 1,800 m AMSL; the landscape is composed of large hills, dissected by several streams that have formed narrow inter-mountainous valleys. The average gradient of the Project site is 13% with a minimum of 0% in the valleys: the greatest gradient being that formed by the Parral River (Rìo Parral). The maximum inclination of the area reaches 90%, mainly on the high slopes of the hills, often capped by escarpments of rhyolitic origin.

According to the geological digital cartography scale of 1:250,000 as published by the *Instituto Nacional de Estadìstica y Geografia* (INEGI), or National Institute of Statistics and Geography of Mexico, geoshapes of rhyolite-torba acida (rhyolite–tuff), geologically eroded with gentle slopes are present. Some rhyolite outcrops can be observed on the upper part of the hills where the relief is more abrupt. This type of rock is of igneous origin, characterised by its high content of silica with an abundant quantity of fine crystals of quartz, generally light color; such characteristics persist in the soil in its early stages of formation. Sediment accumulation is present in the narrow inter-mountainous valleys of alluvial and colluvial origin transported and deposited by the ephemeral currents; the sediments are formed mainly by sand and rounded pebbles. In the channels and in the farthest terraces the sediment is predominantly silt and clay.

The seismological service from the *Universidad Nacional Autònoma de Mèxico* (UNAM), or The National Autonomous University of Mexico, has classified the seismic regions in the Mexican Republic. This classification is an instrument used by the Mexican government to determine the methods for the analysis of statistical stability of the mining structure. The study area is located in a non-seismic zone, considered as a region where there are no historical seismic records and no reported seismic activity in the last 80 years; no soil acceleration is expected greater than 10% of the gravity acceleration.

The geological resources have been subjected to exploitation for centuries, with the Mina La Prieta being one with a major importance on the region.

20.2.3 Soil

The types of soil that exist within the study area are closely linked to the relationship between the climate, geology and relief. The climate benefits the development of gramineous plants, such as the natural grasses. This type of vegetation provides a valuable quantity of organic matter to the soil and has formed a dark and soft superficial layer on the soil; also the climate allows for the accumulation of important elements in the plants' nutrition, hence the reason why the soils are fertile, predominantly Feozem. The relief results in the sediments' distribution, with the Feozem appearing on the highest and most inclined parts, limited by rock and with numerous fragments of rock on the profile and on the surface. It is normal that these parts are associated to Leptosoles (shallow soils, less than 25 cm deep), to the middle and lower hillside. The Feozem is also limited by rocks, but to a depth greater than 50 cm, producing the horizontal underlying red tonal colors as a result of the iron oxidation in the rocks. In the lowest zones the Feozem exceeds a depth of 1 m, with a red appearance and some gravel on the profile.

Another kind of soil, which is not cartographed by the source scale, is the Fluvisol; recognisable by its alternate layers of sediment, as carried and deposited by currents, its major presence is shown in the influence zone of the Rio Parral. It is sandy within the water areas and has a fine texture in confined places. In addition, there are soils that are related to the local human activities in the area, specifically mining. This was clearly defined in the classification system used on Series II.

The soils in the study area present varying erosion grades caused by the anthropogenic activities, specifically agriculture and cattle and in addition to this, the urban development of Parral; all factors which promote the removal and degradation of the soil. An important source of contamination of the soil includes the mining, residues, and among others, the tailings; specifically those generated by the Mina La Prieta. The tailings will be the focus in the process in the Project, due to its location at a site that has not implemented controls in order to avoid its dispersion, because the tailings was deposited before any regulation for this kind of residue existed in Mexico.

20.2.4 Superficial Hydrology

The Project study area belongs to the Bravo-Conchos or Hydrologic Region 24 (RH24) to the river basin M, Rio Florido, and the sub-river basin D, Rio Parral. The Rio Parral is the main stream within the zone, originating in the Sierra Los Azules Mountain to the west of the city of Parral and flowing east where it picks up river flows from several different streams. This only occurs during the rainy season. The most influential streams are the Santo Domingo, Las Lajas, el Toro and Charco Azul. Before reaching the city of Parral, these streams collect at the Presa de Parral, a dam local to the area, which crosses the city of Parral where the Project is located, receiving large quantities of domestic and industrial waste considerably affecting the water quality. Thereafter, the Presa de Parral changes its course to the northeast receiving different river flows and finally ending in the Rio Florido, close to the city of Camargo, Chihuahua. Based on the cartography of superficial water scale 1:250,000, runoff water in the zone ranges from 10% to 20%, with the remainder lost to evaporation.

According to monitoring of the base line studies, the quality of the superficial water, compared to that of Mexican Regulation, exceeds the allowable limits of fats and oils (42.9 mg/L), total dissolved solids with a major concentration in the runoff water influenced in the actual tailings deposit (665 mg/L). Studies indicate that the Rio Parral has faecal coliforms greater than 2,400 MPN/100 mL, due to the drainage discharge of the population of the city of Parral.

20.2.5 Groundwater Hydrogeology

As a consequence of the low geological and soil science variability, the groundwater cartography, scale 1:250,000 edited by INEGI, only recognises 2 geohydrological units. The first one, is defined as a material with low possibilities to function as aquiferous. This occupies almost the entire zone and is associated with rocks or soils - in this case, the rhyolite and acid tuff - without any fracture and almost entirely waterproof. This means that water cannot be kept economically exploitable. The second geohydrological unit is referred to as substrate which presents itself as highly waterproof and has the capacity to store water because of its porosity. In the zone considered within the study, this corresponds to the inter-mountainous valleys created by the colluvial-alluvial soils, where the particles predominate (most especially sands).

From the Administrative point of view, the study area is located in the aquiferous 0834 Parral-Valle Del Verano, and is divided into 3 geohydrological units named I, II and III. The study area is located in Unit II, formed by limestone and shale conglomerates and alluvium on the eastern part, close to Parral. In some parts the alluvium reaches a thickness of up to 300 m. The water from this unit comes from the southeast, from the Sierra Los Azules and Aguilereña, along the streams that originate from them and via underground flow.

In accordance with the studies made by the Government, the aquiferous from Parral-Valle del Verano, is not overexploited and is available to a volume of 3,767,127 m^3/a for new concessions.

According to the monitoring of pits from the area, the underground water exceeds the established limits as defined by Mexican regulations, as it presents fats and oils concentrations of 25.7 mg/L and total dissolved solids of 1,184 mg/L.

When comparing the potable water that is extracted from underground, with the regulation that is established for the water quality for human use, studies indicate that the fluoride limit is exceeded at a concentration of 3.62 mg/L, iron at 0.45 mg/L, aluminum at 0.25 mg/L, arsenic at 0.017 mg/L, lead at 0.028 mg/L and ammoniac nitrogen at less than 0.5 mg/L.

20.2.6 Vegetation

Most of the vegetation communities in a region are determined by the climatic factors. In this instance, the change of use of the soil and the overexploitation of the natural resources in the area have modified the structure and composition of the vegetation in this area. In the base line study of the study area, the Matorral Xerofilo refers to all vegetation in an area which has 2 types of vegetation communities, namely that of thorn scrub and induced grassland.

The vegetation associated with the area around the city of Parral is formed mainly by thorn bushes like huizaches (*Acacia constricta* and *Acacia schaffneri*) and gatuños (*Mimosa biuncifera*), which make up part of the secondary vegetation found in this location. Among the most common species are the *Condalia correli, Aloysia wrightii* and *Aloysia gratissima.* The characteristic of this type of specimen is mostly thorny, thus its classification as a "thorny bush".

In the grassland areas, small plant bushes such the cardenche (*Cylindropuntia imbricata)* occur, but main soil cover is by grass and herbaceous plants, most of these species being classified as underbrush. However, some floral elements of the natural grassland occur in small quantities, predominantly located in the east part of the State of Chihuahua; the most important grasses are *Bouteloua gracilis* and *Bouteloua curtipendula,* both excellent quality grasses.

Another type of vegetation found in parts of the river is known as *Bosque de Galería* (gallery forests), mainly consisting of willow (*Salix spp.*) and poplar (*Populus spp.*) trees.

It is important to mention that the plant registration of the semi desert, such as the desert coral (*Fouquieria splendens),* are indicators of the current concessional change within the region; the evolution of plants in the arid zone is common.

20.2.7 Fauna

A study of the wildlife in the study area, including invertebrates, registered no less than 12 species of invertebrates, 8 insects and 4 arachnids.

At least 16 species of amphibians and reptiles were found in the study area, of which 12 (75%) were reptilian and 4 (25%) amphibian. According to the registered specimens and consulted literature, within the amphibian species, the Bufonidae family represented 50% and the Scaphiopodidae and Hylidae represented 25% each. With the exception of the canyon tree frog (*Hyla arenicolor*), 3 of the 8 species that are reported by Santos *et al*., (2008) coincide. The reptilian family with the most representation was that of the common greater snake (*Colubridae*) at 41.66%, followed by the lizard family

(*Phrynosomatidae*) at 25% and viper family (*Viperidae*) at 16.66%. The lizard family (*Teiidae*) and snake family (*Leptotyphlopidae*) represented 8.33% each.

The species of major interest for conservation corresponds to 31.25% of the total species present, as they are in a risk category based on the Mexican list of endangered species NOM-059-SEMARNAT-2012. These species are made up of snakes and vipers and include 3 Colubridae and 2 Viperidae.

Based on the literature and avifauna sampling, there are 113 species of avifauna or bird life, all within 12 orders (*Accipitriformes, Anseriformes, Ciconiformes, Columbiformes, Cuculiformes, Charadriiformes, Falconiformes, Gruiformes, Passeriformes, Piciformes, Podicipediformes and Strigiformes*). The order *Passeriformes* was the most abundant, having 64 species.

The avifauna species in the study area are of minor concern, with the exception of the chestnut-collared longspur (*Calcarius ornatus)* which is considered as near threatened (NT). The species, however, is not indicated in the Mexican list of endangered species NOM-059-SEMARNAT-2010, meaning that the population is not affected and that there will be reproductive success.

Of the total (6.19%) of species that appear on the list, 2 species are listed as endangered, namely the virginia rail (*Rallus limicola*) - a small water bird - and the prairie falcon (*Falco mexicanus*), neither of which were observed at the study area.

A total of 27 mammal species were registered for the study area, grouped into 4 orders and 8 families. The order Rodentia was the most numerous with 20 species and the members of the family Muridae the most representative with 10 species. Using a Sherman Trap, 2 species were captured, the white-throated woodrat (*Neotoma albigula)* and the deer mouse (*Peromyscus maniculatus).*

Although not observed, evidence of excrement at the study area identified certain carnivore species. The 3 species registered include the coyote (*Canis latrans*), grey fox (*Urocyon cinereoargenteus*) and bobcat (*Lynx rufus*).

Analysis of pellets collected in a town in Matamoros, southeast of the Municipality of Hidalgo del Parral, indicated the presence of a barn owl (*Tyto* *alba*). Bats from the Vespertilionidae family were found, as well as rodents such as the kangaroo rat (*Dipodomys ordii*), white-throated woodrat (*Neotoma albigula*) and the common house mouse (*Mus musculus)* (Vázquez-Morales, 2007); all of them, bar the last one, were registered in the study area.

20.3 Important Environmental and Socioeconomic Impacts

The Project consists of processing old tailings, which has hazardous characteristics, as well as the potential to generate rock acid drainage and release metals and metalloids, which is deposited without control in a site close to the population of the city of Parral. The proposed process is the operation of a lixiviation system (lixiviation HL and recovery plant), that will be located far from the population, the environmental socioeconomic balance is positive for the Project, because the relocation and process of the tailings will result in the following:

20.3.1 Positive Socioeconomic Impacts

- Avoidance of exposure of the population close to the actual tailings deposit to the dust generated by the tailings and thus improving general health conditions
- Generation of necessary employment for an important sector of the populations of the city of Parral and San Francisco del Oro
- Improvement of the economy of businesses in the city of Parral through the economic distribution for the acquisition of goods and services for the project
- Strengthening of the economy of the municipality and the state through the payment of taxes to the Government.

20.3.2 Positive Environmental Impacts

- Relocation of the tailings away from their current location will improve air quality and help to eliminate soil and water contamination generated by the transfer of residues by wind and rain. In addition, it will avoid the decomposition of metallic sulphurs present in the tailings, which currently results in acidification of the soil and the Parral river.

- The operation of the lixiviation system (HL and Plant), will allow for the tailings operations to be carried out under relevant security methods by the Mexican Legislation, avoiding any losses
- The tailings process promotes the revalidation of the mining residues
- With the industrial treatment of the tailings, hazardous characteristics of the material will be eliminated
- The disposition and treatment of the tailings in a lixiviation system will eliminate the toxicity and meet the parameters established by the Law.

20.3.3 Negative Socioeconomic Impacts

- The increment of the population in the city of Parral, requiring a major effort to provide the necessary services to the people
- The economic distribution and the population increase will raise the price of goods and services
- During and after mine closure, employment opportunities will be lost and economic distribution will end.

20.3.4 Negative Environmental Impacts

- The loss of natural vegetation corresponding to the scrub xelofilo
- Migration of the wildlife fauna from the Project site
- Destruction of nest and burrow sites, resulting in the death of small mammals and chicks
- Emission of gases and particles into the atmosphere due to the movement and processing of the tailings, particularly the use and operation of boilers and ovens
- Potential contamination of the soil and water by accidental spillage of dangerous chemical substances and solutions in process
- Potential contamination of the underground water by rupturing of the liner in the HL area and the pond water.

20.4 Environmental Permitting

The Mexican Official Regulation (MOR) NOM-155-semarnat-2007, establishes the environmental protection requirements for the systems of lixiviation of gold and silver.

The following is to be considered:

- How much of an impact the industrial and population growth has generated on the environment; in some instances very considerable to the ecological and environmental balance
- The establishment of ecological criteria for the preservation and sustainable use of the land, in particular, because of the impacts generated by the exploitation of the mineral substances, just like the actions that alter the forest grounds, it is considered in the General Law for Ecological Balance and Environmental Protection, as an affair of national and federal interest
- That in order to prevent and control the effects generated by the exploitation and exploration of non-renewable resources in the ecological balance and integrity of the ecosystems, The Secretary will expedite the official Mexican regulations that will allow the proper finding and formation of the residue deposits of the lixiviation systems and the establishment of the mineral benefits
- That due to the significant impact that the residues proceeding from the mineral benefit plants produce over the environment, its control becomes increasingly necessary
- That the lixiviation HL is one of the systems for the disposal of the solid residues generated for the benefit of the minerals contemplated in article 17 of the General Law for the Prevention and Integral Management of Residues, and must meet the conditions of maximum security, with the purpose of guaranteeing the protection of the population, the economic and social activities, and in general, the ecological balance

- That the testing method established by the procedure to determine the hazard presented by the lixiviated minerals proposed in this project was developed and standardised to determine the characteristics that makes them hazardous because of its toxicity to solid matrixes, such as mining residues, and that it is accepted by the national and international scientific community

- That according to the "disposed" in article 47, section 1 of the Federal Law over Metrology and Normalisation, dated 28 February 2008, when the Project of MOR NOM-155-SEMARNAT-2007 was published, that establishes the requirements of environmental protection for the mineral lixiviation systems of gold and silver, in the Official Diary of the Federation, with the purpose that the interested, in a term of 60 natural days following the date of publishing, present their comments to the National Counseling Committee for the Environment and Natural Resources located in the 4th floor of 4209 Adolfo Ruiz Cortinez Boulevard , Jardines de la Montaña community, Tlalpan Delegation, zip code 14210 of this City

- That during the mentioned term, the manifestation of the regulatory impact of the cited Law Project, was in public disposition for its consult at the aforementioned address, according to article 45 of the aforementioned arrangement

- That according to the "established" in article 47, sections I and III of the Federal Law on Normality and Normalisation, the interested parties presented their comments to the Law Project mentioned, which were analysed by the National Counselling Committee for the Environment and Natural Resources, performing some modifications proceeding the Project; the answers to the comments and modifications aforementioned were published in the Official Diary of the Federation on 17 December 2009

- That once the procedure has been established in the Federal Law over Metrology and Normalisation for the elaboration of official Mexican regulation, the National Counselling Committee for the Environment and Natural Resources, in the session held on 28 August 2008, approved the present MOR NOM-155-Semarnat-2007.

Because of the previously presented and established, the following has been issued:

"MEXICAN OFFICIAL REGULATION NOM-155-SEMARNAT-2007, WHICH ESTABLISHES THE REQUIREMENTS FOR THE ENVIRONMENTAL PROTECTION FOR THE LIXIVIATION SYSTEMS FOR GOLD AND SILVER"

Preface

This MOR was expounded with the particiHLn of the following bodies under the coordination of the subcommittee II - Energy and Extraction Activities of the National Normalisation of the Environment and Natural Resources Committee:

- The Mexican Mining Engineers, Metallurgists and Geologist Association A.C.
- Mexican Mining Chamber, A.C.
- Biologist College of Mexico, A.C.
- Federal Environmental Protection Attorney's office
- Industrial Inspection Attorney's sub-office
- Secretary of Economy
- General Mining Coordination
- Secretary of Environment and Natural Resources
- General Management of Energy and Extraction Activities
- General Management of Materials and High Risk Activities
- General Management of Environmental Impact and Risk
- General Management of Environmental Regulation and Politics
- Mexican Society of Soil Mechanics, A.C.
- San Luis Potosí Autonomous University
- Study centres, advisement and services in environmental systems
- Mexican Autonomous University
- Geographic Institute

- Geologic Institute.

20.4.1 Introduction

The lixiviation of minerals is one of the most commonly used methods today for the extraction of metals due to its relatively simple operation, technology and low cost of investment in comparison to other methods.

The main environmental problems in the operation of a lixiviation system are associated with the potential generation of acidic sewage and the transportation of the metals from the lixiviated minerals, as well the loss of stability in the system.

The environmental effects generated are recognised worldwide due to the inadequate management of this kind of mineral benefits system. The environmental impacts can be significantly minimised through applications of the best environmental technologies that allow the adequate design, construction, operation and elimination pf the toxicity of the facilities; as well as the evacuation procedures and restoring of activities.

Objective

This MOR establishes the specifications for the characterisation of lixiviated mineral and the site, as well as the requisites for environmental protection for the preparation stages for the site, construction, operation, closing and monitoring of the lixiviation of minerals system for silver and gold.

Field of Application

This regulation is of public order and social interest, as well as the mandatory observation in all of the national territory for the particulars and companies that construct and operate mineral lixiviation systems for silver and gold. It also applies to the lixiviation systems that go through an evacuation, which was not authorised in the environmental impact evaluation.

References

- MOR NOM-043-SEMARNAT-1993, maximum emission levels to the atmosphere of solid particles originating from fixed sources, published in the Official Diary of the Federation on 22 October 1993
- MOR NOM-052-SEMARNAT-2005, that establishes the characteristics, the identification procedure, classification and the listing of hazardous materials, published in the Official Diary of the Federation on 23 June 2006
- MOR NOM-059-SEMARNAT-2001, protection of environmental species, native to Mexico, of the wild flora and fauna on the endangered list and the specifications for their inclusion, exclusion or change of list of the endangered species, published in the Official Diary of the Federation on 6 March 2002
- MOR NOM-141-SEMARNAT-2003, that establishes the procedure to characterise the residues, as well as the specifications and criteria for the characterisation and preparation for the site, Project, construction, operation and post operations of the residual dams, published in the official Diary of the Federation on 13 September 2004
- MOR NOM-001SEMARNAT-1996, that establishes the maximum limits allowable of contaminants in the residual discharges in the water and into the national land, published in the Official Diary of the Federation on 6 January 1997, as well as its clarification published on 30 April of the same year
- MOR NOM-011-CNA-2000, conservation of the water resources, that establishes the specifications and the methods to determine the annual availability of the national waters, published in the Official Diary of the Federation on 17 April 2002
- Mexican Regulation NMX-AA-014-1980, receiving bodies, testing, date of approval and publication on 5 September 1980
- ISO 5667-6:2005. Water quality - Sampling - Part 6: Guidance on sampling of rivers and streams, International Organization for Standardisation
- ISO 5667-3:2003. Water quality - Sampling - Part 3: Guidance on the preservation and handling of water samples. International Organization for Standardisation.

Definitions

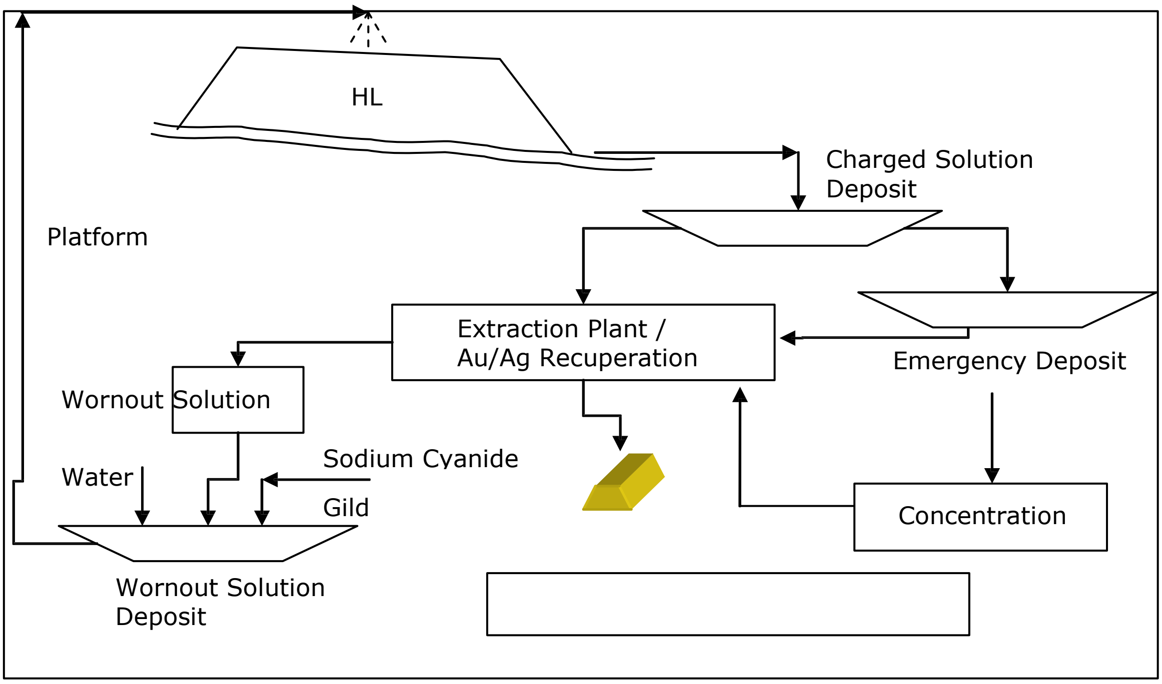
Insofar as the MOR definitions included in the General Ecological Balance and Environmental Protection Law are considered, The General Law for Prevention and the General Law for the Prevention and Integral Management of Residues, National Water Laws, General Wildlife Law, Sustainable Forest Development Laws and its Rules, the following apply:

- *Hydrocyanic Acid (HCN)* - Chemical compound of free cyanide, also referred to as Hydrogen Cyanide, which chemical balance in respecting the ion cyanide (CN-) depends on the pH system
- *Lixiviation Agent* - Chemical compound that is used in the HL to dissolve and recover values in the minerals
- *Cyanides* - All the CN- groups in cyanuric compounds which can be determined as the ion cyanide
- *Closing* - The toxicity elimination activities, final stabilisation, restoration and monitoring that are initiated and the end of the operation of the lixiviation system
- *Compactness (C)* - The concentration of solids represented by the relation between the volume in the solids and the total mass volume of the bottom of the tank. It is obtained by dividing the volumetric weight of the solids (γs). Example: if γd = 1.5 t/m^3 and γs = 2.5 t/m^3, C = 0.60; it means, you have a 60% solids concentration
- *Weak Cyanide-Metal Complexes (WAD-CN)* - Chemical compounds constituted by the formation of soluble complexes of a metal with one or more ion cyanide molecule. In these compounds, the ion cyanide can be freed from the complex by coming in contact with a mildly acidic solution at 4.5 pH. The chemical stability of the compound depends on the metallic ion involved, with cadmium and zinc being the weakest (Constant dissociation of water in the order of 1 x 10-17)
- *Gild* - Metal alloy constituted by gold and silver recovered during a metallurgic-mining process.

- *Acid Sewage* - Lixiviated, flowing or contaminating sewage with a pH<4, that is produced by the natural oxidation of sulphuric minerals contained in rock or residues exposed to the air, water and / or microorganism promoters of oxidation in sulphurs
- *Wornout or Lixiviated Minerals* - Mineral residue that has been treated under a lixiviation material, which includes a toxicity elimination stage
- *Complementary Builds* - Facilities and buildings necessary for the correct operation of a lixiviation system
- *HL* - Buildings and services that integrate the process of lixiviation in the gold and silver minerals of low quantity of metal. A lixiviation HL is commonly constituted by (a) one or more tanks constructed over a platform where the base has been waterproofed to prevent the infiltration of the lixiviation solution; (b) a recollection tank for the charged solution; (c) an emergency or overflow tank; and (d) a tank for the recollection of the wornout solution (see Figure 20.4.1-1)
- *Tank* - Mineral material generally crushed, that is deposited over a platform where metal values are recovered by the lixiviation process; also known as piles or heaps
- *Deposit* - Waterproof deposit built for the management of the watery solutions generated in the lixiviation process
- *Platform* - Coated surface where crushed mineral is arranged which metallic values are recovered by the process of lixiviation
- *Lixiviation Process* - Mineral benefiting, according to the definition in article 3, section III of the Mining Law, that applies to the selective dissolution of minerals with economic worth
- *Coating* - Synthetic geomembrane that is placed on the platform and waterproofs the surface preventing the infiltration of contaminating solutions
- *Lixiviation System* - Buildings and services that integrate the process of lixiviation in the gold and silver mineral tanks of low metallic content. A system constituted commonly by (a) the builds in the HL; and (b) the metallurgic plants for the extraction of gold and silver from the charged solution (see Figure 20.4.1-1)

- *Wornout Solution* - That occurring in a watery state, which has been stripped of the dissolved economic values, and that is generally conditioned to be reused as a lixiviation agent in the process
- *Charged Solution* - That occurring in a watery state, charged with the elements of economic worth, once recovered from the lixiviation process.

Figure 20.4.1-1: Lixivation System



20.4.2 Specifications for Environmental Protection

General Specifications

In the preparation of the site, construction, operation, closing and monitoring of the mineral lixiviation systems for silver and gold must apply the specifications for the characterisation of the site and the protection criteria of environmental protection established in the present MOR.

The studies, engineering projects and other technical or scientifically information used, as well as the evidence of its fulfillment, must be kept as classified and available on the site so authorities can verify its existence and content in the moment they consider necessary.

An environmental supervisor must be designated to the Project site, to detect the critical aspects from an environmental point of view and be able to take decisions, define strategies or modify activities that generate impacts on the environment, as well as make sure that the specifications established by the regulations are fulfilled.

Dangers of the Lixiviated or Worn Minerals

The tests for the characterisation of the mineral must be performed parting from samples of the lixiviated or wornout minerals.

In order to characterise the lixiviated or wornout materials, samples must be obtained:

- Before beginning operations, from the metallurgic tests performed
- During the mining operations, from metallurgic tests performed in the laboratory or directly from the tanks.

The method used in the laboratory for the benefit of the mineral, must simulate the lixiviation process followed during operation.

Testing to determine the danger of the wornout mineral

In the operation stage, 2 representative samples each month during the productive life of the project, from which an annual composite will be made that represents the characteristics of the worn out mineral. These samples must be obtained from lixiviation tests at a laboratory level, made with mineral yet to lixiviated extracted from the mine or with wasted mineral from the tank.

For the samples indicated, the test mentioned above must be performed 3 times.

Mobility test

A toxic constituent test must be performed according to the mobility procedure with meteoric water.

If the extract concentration of one or more of the listed elements in the chart referring to the toxic constituents of the PECT extract of the regulation NOM-052-SEMARNAT-2005 is higher than the allowable limits, it is considered dangerous due to its toxicity.

Acid drainage generation test

To determine if the lixiviated mineral is a potential generator of acid drainage, the modified acid balance test must be performed established in the regulation annexures 1 and 5 (II) of the NOM-141-SEMARNAT-2003 and subject itself to the limits established in Table 20.4.2.-1.

Table 20.4.2-1: Limits to Determine the Reactive Dangerous of the Mineral

Potential Neutralisation (PN) / Potential Acid (PA)		
PN/PA ≤ 3	Acid generator *	Dangerous
PN/PA > 3	Does not generate acid drainage	Not dangerous
*If the value of the relationship PN/PA is >1 and ≤3 it is considered an *acid generator*, unless based on kinetic tests in which case the opposite is proved.		

20.4.3 Characterisation of the Site

For the purposes of identifying the characteristics of the site where the lixiviation system is to be located, tests must be performed to identify the elements present in the environment, as well as those susceptible to being affected by the impacts generated by the operation of the system. The characterisation of the site must consider the following studies in the Project, and indicate the reference sources.

<u>Climatic Aspects</u>

To make sure the necessary measures are taken to prevent damages in the lixiviation system derived from climatic factors and avoid generating a hydraulic charge in the tanks or produce a spill of surplus outside the lixiviation system, the following climatic aspects must be documented:

- Hydrologic region located in the site, valley and sub valley (Figure 20.4.3-1)
- Average monthly rain and annual as well as its minimum and maximum values.
- Average monthly temperature and annual, as well as its minimum and maximum values
- Evaporation levels
- Maximum storm observed for duration of 24 h
- Storm design for a period of 100 years
- Storm design for a period of 10 years
- Storm design for a period of 50 years
- Wind speed, direction, and frequency.

The site selected must be described according to the topographic classification in the Mexican Republic, included as Figure 20.4.3-1 of the following regulation.

When the hydrometric and pluvial metric information for the region studied is not available or enough, the data can be determined indirectly, using the information of meteorologist center closest to the site.

The climate types must be determined based on the thematical cards from the National Institute of Statistics, Geography and Informatics, scale 1:1,000,000 (Climate-Scale 1: 1,000,000 National Institute of Statistic, Geography and informatics, 2001).

Edaphic Aspects

Determine and identify the type of ground according to the FAO/UNESCO/ISRIC system (Edaphology of the Mexican Republic, National Institute of Statistic, Geography and informatics, 1994).

Geotechnical Aspects (Geology, Mechanics of Land and Rocks)

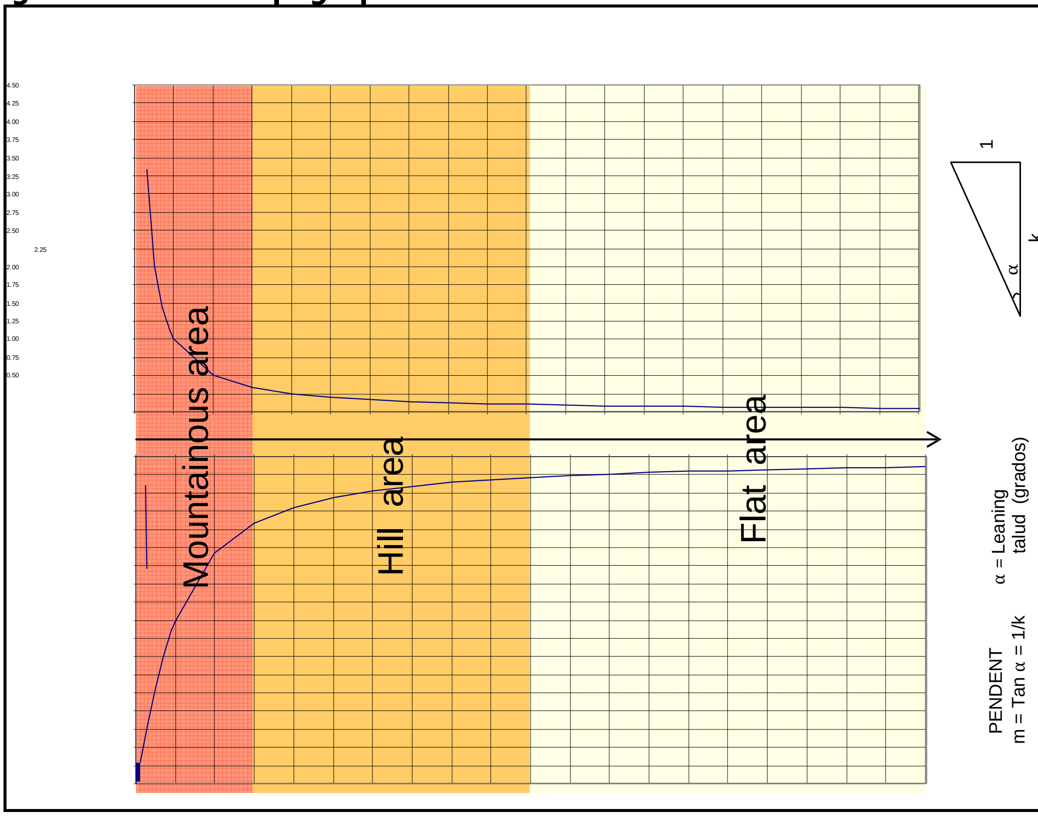
The geotechnical factors to be considered include the following:

- Describe the general geological structure and details of the zone in which the lixiviation system will be located in; the mechanical properties of rock formations, especially the ones regarding their permeability and resistance; the present fractures on the site and its characteristics; the conditions of the fissures, orientation, width, separation and depth of the fissures; and the grade and depth of the fissures; the actual grade and the depth of the intemperate rock and the possibilities of future alterations
- Obtain the stratigraphic profiles of the foundation grounds, highlighting the variation of the relative resistance, the homogeneity and heterogeneity of the mentioned, as well as the classification of the grounds according to the Unified Grounds Classification System (UGCS).

Figure 20.4.3-1: Hydrologic Sub-regions of Mexico

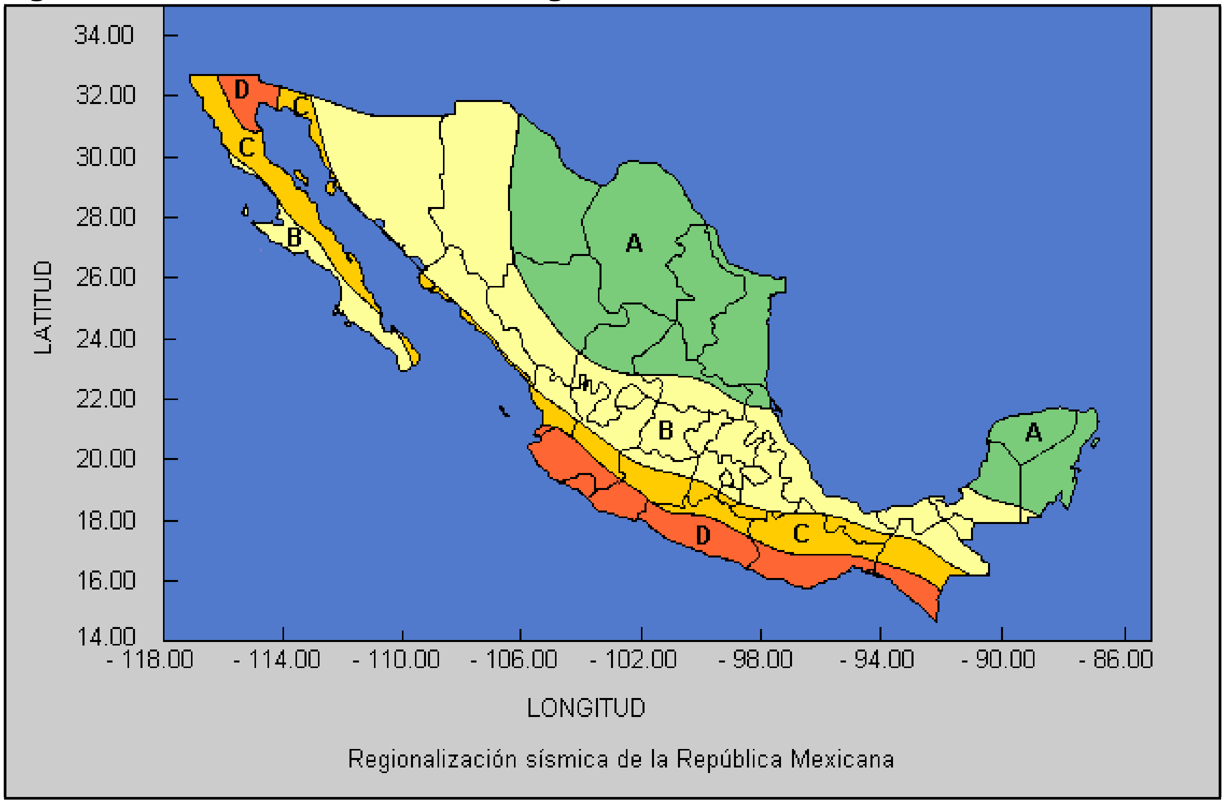
LEGEND:			
1A Tijuana River	10C Mocorito River	18B Mid Balsas	26B Aho Panuco River
1B Ensenada	100 Cualican River	18C Tepalcalepec	26C San Juan Queretaro River
2 Central-West Baja California	10E ElataPiaxtla & San Lore Rivers	19 Big coast of Guerrero	260 Tula River
3 South East Baja California	10G Sinaloa Plain	20A Small Coast of Guerrero	26E Tulancingo River
4 NorthEastBaja California	11A Baluarte and Canas garrison	20B Verde River	26F Valley of Mexico
5 Central Baja California	11B San Pedro.Rosa M.Acaponeta	21 Coast of Oaxaca	27 Norte of Veracruz
6 SouthEastBaja California	12 A Upper Lerma	22A Tehuantepec River	28A Actopan La Antigua
7 Colorado River	12B La Laja	22B Rest of the Region	28B Papaloapan River
BA Sonoyta River	12C Mid Lerrna	23 Coast of Chiapas	29 Coatzacoalcos
BB Concepcion River	120 Lower Lerrna	24A Conchos River	30A Upper Grijalva
8C Altar Desert	12E Aho Santiago River	24B Amistad.Ojinaga ditch	30B Lower Grijalva
80 Sin Nombre	12F Bajo SantiagoRiver	24C Salado and Sabinas Rivers	30C Usumacinta
BE Puerto Libertad	13 Huicicila River	240 Medio Bravo River	300 Candelaria River
9A South Sonora	14 Arneca River	24E Alamo River	31 West Yucatan
9B Yaqui River	15 Costa de Jalisco	24F San Juan River	32 North Yucatan
9C Mayo River	16A Coahuayana River	24G Bajo Bravo River	33 East Yucatan
90 Bacoachi River	16B Arrnera River	25A San Fernando River	34 North Cuencas Cerradas
10A Fuerte River	17 Michoacan Coast	25B SotoLa Marina River	35 Mapimi
10B Sinaloa River	18A Upper Balsas	26A Lower Panuco	

Figure 20.4.3-2: Topographic Classification of Mexico



k	α	Tan α
0.00	90.0	∞
0.05	87.1	20.00
0.10	84.3	10.00
0.15	81.5	6.67
0.20	78.7	5.00
0.25	76.0	4.00
0.30	73.3	3.33
0.35	70.7	2.86
0.40	68.2	2.50
0.45	65.8	2.22
0.50	63.4	2.00
0.55	61.2	1.82
0.60	59.0	1.67
0.65	57.0	1.54
0.70	55.0	1.43
0.75	53.1	1.33
0.80	51.3	1.25
0.85	49.6	1.18
0.90	48.0	1.11
0.95	46.5	1.05
1.00	45.0	1.00
1.20	39.8	0.83
1.40	35.5	0.71
1.60	32.0	0.63
1.80	29.1	0.56
2.00	26.6	0.50
2.20	24.4	0.45
2.40	22.6	0.42
2.60	21.0	0.38
2.80	19.7	0.36
3.00	18.4	0.33
3.20	17.4	0.31
3.40	16.4	0.29
3.60	15.5	0.28
3.80	14.7	0.26
4.00	14.0	0.25
4.20	13.4	0.24
4.40	12.8	0.23
4.60	12.3	0.22
4.80	11.8	0.21
5.00	11.3	0.20
5.20	10.9	0.19
5.40	10.5	0.19
5.60	10.1	0.18
5.80	9.8	0.17
6.00	9.5	0.17
6.20	9.2	0.16
6.40	8.9	0.16
6.60	8.6	0.15
6.80	8.4	0.15
7.00	8.1	0.14
7.20	7.9	0.14
7.40	7.7	0.14
7.60	7.5	0.13
7.80	7.3	0.13
8.00	7.1	0.13
8.20	7.0	0.12
8.40	6.8	0.12
8.60	6.6	0.12
8.80	6.5	0.11
9.00	6.3	0.11
9.20	6.2	0.11
9.40	6.1	0.11
9.60	5.9	0.10
9.80	5.8	0.10
10.00	5.7	0.10
20.00	2.9	0.05
100.00	0.6	0.01

Figure 20.4.3-3: Mexican Seismic Regions



A. Not Seismic Region
B. Peneseismic Region
C. and D. Seismic Region

Determine the seismic region in which the site is located based on the information in Figure 20.4.3-3, Seismic regions in the Mexican Republic (Seismic Regions in Mexico, Seismological Service UNAM, 2003).

Hydrological Aspects

To verify that the lixiviation system does not present a risk to the bodies of water on the surface and underground, in terms of their use and exploitation, the following studies must be performed:

Superficial hydrology

a) Locating the hydrologic valley where the lixiviation system will be installed.

b) Determining the average annual superficial glide volume of the water above the HL according to NOM-011-CNA-2000.

c) Identifying the areas susceptible to floods.

d) Determining the quality of water of the superficial and underground bodies, based on the physical and chemical parameters established in the NOM-001-SEMARNAT-1996 and those metals and chemicals compounds not mentioned in the charts, representative of the process. The body of water testing technique could be the NMX-AA-014-1980 or the NMX that are currently effective, or the regulations ISO 5667-6:2005 and ISO 5667-3:2003. At least two sample of water will be taken, one in a period of low water and another one during rainy season.

Underground hydrology

On the site selected for the lixiviation system, the following must be performed:

- Evaluate of the aquiferous vulnerability according to the Regulation Annexure 2 of the NOM-141-SEMARNAT-2003
- Verify the existence of the use of hydraulic sub terrains in a perimeter of 1,000 m around the limits of the lixiviation system, indicating its location in geographical coordinates, the construction characteristics and water usage
- Perform the physical and chemical characterisation of the native underground water in terms of its cyanide, arsenic, cadmium, copper, chrome, mercury, nickel, lead and zinc, as well as the parameters directly associating with the generation of derivatives of system of lixiviation. The characterisation must be done directly on the site of interest or through biannual sampling on the use of hydraulic sub terrains on the borders of the site of the lixiviation system. In order to do this,

two samples will be taken of the sub terrain water, one of the water in the bottom and another of the surface water of the selected site.

Wildlife

The selected site must not be classified as a critical habitat, according to that established in the General Wildlife Laws.

The presence of endangered species must be identified according to the established in NOM-059-SEMARNAT-2001.

The vegetation and land that will be affected must be identified as well as density and relative abundance per species with common and scientific names.

The types of vegetation must be determined according to the classification of use from INEGI, which can be found by the interested parties in the Environment and Natural Resources of the States Secretary (Use of Land and Vegetation Series III, National Statistics, Geography and Informatics Institute, 2005).

20.4.4 Determining the Magnitude of the Risks and Criteria of the Project HL

The risks for the populations nearby must also be evaluated, bodies of water, fragile ecosystems, endangered species or agricultural land, associated with the physical conditions of the site where the lixiviation system will be developed and operated. For this, the measures needed to minimize the possible risks derived from spills or leaks, partial or full failure of the lixiviation HLs must be foreseen from the beginning of the project.

In the Regulation Annexure 3, the criteria and recommendations are established for the methods of stability analysis and proper monitoring, according to the topographical, hydrologic and seismic conditions under which the Project will be developed. In order to ensure the stability of the build during the project, construction and operation of the HL, relative risk intentions must be considered by:

- Load capacity of the foundation terrain
- Stability in the incline slopes of the tank
- Differential establishment in the tanks
- Breaking in the coating
- Surface erosion in the tanks, caused by the rain
- Lixiviated spills because of a storm.

20.4.5 Site Preparation Criteria

The site must be prepared to stop or mitigate the damage on the identified elements, for this, the following procedure must be performed:

Hydrology

The preparation for the site to build a lixiviation system must include the prevention and control of contamination measures, through engineering builds that credit that the superficial bodies of water will not be affected, or the hydrologic sub-terrains.

Land

- Before construction, the vegetation layer must be removed to use this resource in the reforestation activities and the recovering of vegetable cover
- The site of temporary storage for the recued land must have the protection measures that avoid aeolic or pluvial loss
- A characterisation must be obtained to understand the values of the bottom of the site; these will verify the end of operations to dismiss land contamination by these elements.

Wildlife

- The species at risk located in the project area, must be protected, depending on the case, through conservation and recovery projects through the establishment of special handling measures and the preservation of the habitat, according to the established in the General Wildlife Law and its Regulation

- Prior to the removal activities, tree species must be identified that will remain on site or also the ones that will be integrated to the green land design areas, as well as the biological species susceptible to transfers and those with a biological or regional worth
- Defining and locating surfaces closet to the affected area, with their dimensions and environmental conditions that allow them to relocate, transfer, reforest or reproduce with native materials, a quantity of individuals with a risk category, endemic and of complicated regeneration similar to the original
- Defining and signalling the zones where the rescued vegetation will be kept and develop a protection programme that includes conservation areas and in this case the designate an area for a botanical garden for the storing of vegetation material of the site and use the seed to produce individuals susceptible to be used in the restoration projects for the site
- The relocation, transferring and monitoring must be performed with methods that guarantee a 95% survival rate or higher than the relocated or transferred specimens; if this is not possible, the dead specimen must be replaced by individuals of the same species obtain or produced in a nursery
- The vegetation removal must allow the transportation and of the fauna to less troubled areas
- When material exists, product of the removal of individual herbal species and trees not redeemable must be crushed and incorporated to the stored land
- Necessary measures must be taken to limit the access of fauna to cyanide solutions.

Building Criteria

- The necessary studies must be obtained, to ensure that the selected site will be able to handle and store the volume of lixiviated mineral, according to the useful life of the HL, considering the classification by size, weight and volumetric material

- The excavation, levelling, compressing and filling necessary for the preparation of the site must guarantee that its waterproof, as well as the conservation of the natural drain capacity of the zone
- The HL stability must be ensured, considering the topography of the terrain, the hydrology of the zone and the seismicity of the region, as well as the geometry of the selected tank. In the detailing of the Project, geotechnical and hydraulic relative risk intensities must be incorporated, as well as the criteria for the stability analysis and monitoring described in the Regulation Annexure 3
- In the design and construction of deviation channels, trenches, sediment tanks, discharge channels, dikes, etc., the hydrology of the superficial site must be taken into account in order to avoid spills
- All tanks must have a synthetic and impermeable geo membrane with contention purposes, to avoid environmental damage by leak of substances
- A leak detection and control system must be present in the tanks as well as the solution tanks, and must be continuously operating
- The synthetic geomembrane used in the HL must be able to handle the type of solution, the physical load of the tank, the weather as well as the mineral discharges
- The waterproof coating must be kept until the monitoring of the site is finished
- The tanks which purpose is to contain the solution coming from the process, with the exception of the emergency tank, must have a primary and secondary synthetic geomembrane, as well as a fluid recovery system that penetrate the primary geomembrane, in case of rupture in the same. A material that can easily transport said fluids to the recollection point where it can be recovered must be place in between the geomembranes

- When the material in the geomembrane is incapable of containing, collection, transporting and removing liquids at a rate that prevents the existence of hydraulic charge transfers between the first and second membranes, the tank must be removed from operation and emptied
- The appropriate measures must be taken to mitigate the emissions of powders, gases and particles to the atmosphere, coming from the construction, operation and closing of the system, with the purpose of avoiding them from reaching a nearby population or altering the air quality
- A perimeter protection fence must be installed as a cautionary measure to prevent the access of the surrounding wildlife
- Systems must be installed which purpose will be to avoid the presence of birds in the cyanide solutions
- Alternate sources of fresh water must be established for the consumption of the surrounding wildlife present on the site
- The water that is constantly circulating in the lixiviation system must not come in contact with other natural bodies of water on the surface.

Construction-Operation Criteria.

The construction of the lixiviation HLs must meet the following specifications:

- The maximum differential settlements must be able to stop the formation of cracks and fissures in the tank as well as the coating, reassuring the stability in the build without filtrations, especially under the natural foundation terrains
- All the necessary builds must be made for the management of superficial water within the influence zone that belongs to the lixiviation system, with the purpose of assure the correct hydraulic functioning of all the main and complementary facilities, and avoid the hydraulic drainage from invading the local HL
- The construction of complementary builds must be done considering the appropriate inclines that assure a good management of the superficial water

- When the circulation of solutions is done by gravity through channels or open conducts, it must be verified that there will be no spills or filtrations. Warning signs located in the appropriate places according to the topographical and visibility conditions of the site
- The cyanide solutions must be kept in a pH value of 10.5 or higher to control the hydrocyanic acid formation at acceptable levels and avoid the creation of environmental impacts derived from the toxicity of the compound
- During the operation, the circulation system must be monitored, (solution tank)
- During the construction and operation of the lixiviation system, the superficial and underground bodies of water must be monitored through monthly sampling. The testing sites must be identified of the superficial and underground bodies of water
- In the case of the underground water, two monitoring pits must be built and operated, locating water above the lixiviation system and underneath. This last one mentioned must be placed at a maximum distance of 1.5 times the width of the lixiviation mineral tank, perpendicularly to the flow of the local sub terrain. In the case that the lixiviation mineral tank presents an irregular geometry, the biggest dimension must be considered
- The distances indicated in the previous point can be modified according to the topographical conditions, the variation of the hydraulic gradient, the hydraulic conductivity the depth of the water table level, as well as the terrain availability, in such a way that a trustworthy and periodic monitoring can be assured
- Each underground monitoring well must rely on a register that indicates the number or identification password; the location in geographical coordinates, pit (x, y, z), linked to the same reference bank; The lithological cut of the formations; the construction characteristics; the width, the depth and the ending Project; as well as the physicochemical analysis results made at that point
- If the corresponding evaluation results in a vulnerable aquifer or signs of utilisation appear in the surrounding area of the lixiviation system, the monitoring

must reach water level. In this case, complementary engineering builds must be constructed to guarantee the integrity of the aquifers

- The monitoring of the superficial waters in the areas surrounding the HL must be performed according to the considerations above
- For the representative testing and analysis of underground water, the parameters used in the physical and chemical characterisation parameters of the underground water must be used according to that as stated herein
- The design of the monitoring Wells must consider seasonal oscillations in the levels and measure the depth of the phreatic level or the piezometric level, as well as allowing the collection of water samples representative of the aquifers. During the monitoring of the aquifer, any variation in the water table level or the piezometric level must be registered
- It is recommended that the HL not be built over confined natural stratum of fine grain material, in which clay is predominant, saturated limes or that are susceptible to saturation with the water contained in their interstice, derived from its possible consolidation because of the increasing charge during the formation of the tanks. This can occur in confinement conditions in which the water cannot leave the material before mentioned, causing a fluidisation effect, and with this, displacement that implies differential settlings in the HL. In this case, water pressure measuring sensors must be installed in the interstice of said material, to identify the possibility of its displacement, and with this possible differentials settling in the HL
- Topographical settling witness must be installed to register observations at the end of rain or drought periods, with the purpose of preventing differential settling in the terrain that may cause ruptures or fissures in the waterproof coating.

20.4.6 Toxicity Elimination

Once the values have been recovered, the lixiviation HL must be washed and treated, before turning it into a lixiviated or wornout mineral deposit. The deposit will be stabilised, when the washing solution metes the following values:

- The weak complex levels of cyanide associated with the metals (WAD-CN) in the effluent water washed or treated must be below 0.2 mg/L
- The potential hydrogen pH level in the effluent washed and treated water is between 5 and 10.

The water flow in the HL must meet the maximum limits established in the NOM-001-SEMARNAT-1996.

In the lixiviated or wornout mineral HL, once stabilised must insure that the conditions prevent contaminant transport by the migration of meteoric water, and must extract the maximum liquid existent in the tank.

Information must be obtained of the procedures for the characterisation of the lixiviated or wornout materials in the process, when they are generated, apart from the stabilizing procedures for the components in the process, the duration and washing procedures must be recorded, as well as the sampling techniques and the estimated curve for the reduction of residual draining.

20.4.7 Criteria for the Closing of the HL

Once the tank reaches the end of its working life, necessary measures must be implemented in order to:

- Prevent the hydraulic and aeolic erosion with the purpose of guaranteeing that the land, sediments and superficial and underground bodies of water will not be affected
- Guarantee the physical stability of the HL.

When the tanks on the operation stage became potential generator of acid, some actions must be established to avoid the formation of acid drainage, securing the not dissolution of the toxic elements.

When it is not convenient to establish the measures mentioned in the previous number to prevent acid draining, treatment measures must be established to avoid affecting the bodies of water, grounds and sediments because of its acidity or contamination with toxic elements.

The HL must be disabled according to the following concepts:

- Stability of the banks and modification of its inclination, with the purpose of stopping the speed of the superficial draining and to reduce the erosive process
- Establishing the native vegetation:
  - The surface of the HL must be covered with recovered soil or also with materials that allow the fixation of vegetation species
  - The vegetable species that are used to cover the deposit must be from the native region to guarantee the succession and permanence with a conservation minimum.
- Ensure that the conditions of the sewage avoid the superficial draining from affecting the tank
- Arrange the geometry fomenting techniques that minimize adverse visual effects.

The loaded and worn out solution tanks must be recovered considering:

- Its filling with non-hazardous materials and its outline approximating the original shape of the site
- Ensuring the sewage capacity of the superficial water according to the one that existed previously to the affectation.

The banks must be adjusted, in this case, to give it an inclination that guarantees the static and dynamic stability of the lixiviated material tank.

The closing of the metallurgic plant must be performed and the cleaning and dismantling of the aforementioned, unless it proves useful to their parties.

20.4.8 Monitoring

Monitoring of Bodies of Water

A monitoring system must be in place that allows the evaluation of the effectiveness of the protection measures applicable at the moment. The monitoring during closing stage must meet the established in the section "Construction – operating criteria", and annual testing must be performed of the aquifers during 20 years starting from the closing date of the HL, when lixiviated or worn out material has proved to be dangerous in the test applications of number 5.2.

Monitoring of Superficial Waters

- The monitoring of superficial waters in the area surrounding the HL must be performed according to the considerations in the section "Superficial hydrology"
- The current regulations must be used as base when referring to residual water discharges, regarding the cyanide, arsenic, cadmium, copper, chrome, mercury, nickel, lead and zinc, as well as the metals and chemical compounds, representative of the process; maximum limits allowed; receiving bodies; indicated usage and monitoring frequencies. In this case, the quality of water of the water monitored above the HL will be used as base
- When the results of the monitored quality of the water, register an elevation in the contaminants, and this change of quality is related to the operation of the system, the appropriate authorities must be informed and the necessary correction measures must be taken determined by the authorities.

Monitoring of Underground Water

- The monitoring of the underground water must be performed through wells built according to the specifications herein
- For the representative sampling and analysis of underground water, according to that indicated in the section "Superficial hydrology"
- The results of the monitoring of the water wells above the HL must be compared to the monitoring Wells of underground water. When the results of the monitored water register an increase in contaminants, in comparison to the quality of native water determined in the section "Superficial hydrology", it must be informed to the appropriate authorities and correction and sanitation measures should be implemented as determined by the authorities.
- The monitoring of the superficial and underground waters can be concluded once the conditions a and b are met and when the lixiviated or worn out material is no longer dangerous
- Sensor monitoring must be performed
- Topographical witness monitoring must be performed.

20.4.9 Particle Dispersion

The regulation NOM-043-SEMARNAT-1993 will be applied to the emissions coming from the foundry operations in the in the metallurgic plants.

The monitoring of the solid particles can be concluded when the criteria established in the regulation NOM-043-SEMARNAT-1993 is met.

20.4.10 Seismology

When the HL is located in the seismic region according to Figure 20.3.3-3, a seismograph must be installed in one for the banks.

When the data on the seismograph indicate the risk of collapse or overflow, the necessary measures must be taken to stabilize the banks

20.4.11 Protection of Endangered Species

In the programme identified, registers must be established of the results of the aforementioned regarding the conservation of endangered species and the rescue of the flora and fauna. This must be applied from the beginning of the project activities, as well as provide photographic or video evidence to the appropriate authority that requires its review. The monitoring actions must be performed every 6 months periodically.

The monitoring of the conditions in which the wildlife specimens are found will be concluded when they are able to subsist on their own.

A binnacle and graphic evidence must be kept of all the activities performed during the monitoring and closing stage.

20.4.12 Conformity Evaluation

For this procedure, the definitions contained in the Federal Law over Meteorology and Normalisation and its Regulation must be considered.

The evaluation of the conformity of the MOR in effect, can be performed by the *La Procuradurìa Federal de Protecciòn al Ambiente* (PROFEPA), or The Federal Attorney for Environmental Protection, or by the verification units credited and approved by Federal Law over Meteorology and Normalization and its Regulation

In order of the evaluation to be performed by the PROFEPA the promoter must complete the process registered in the Federal Register of Processing and Services.

In the case that the promoter desires that the evaluation be performed by a verification unit, the services of a credited and approved verifier by the government office will be hired.

The evaluation of the conformity must be performed in the stages specified in the MOR, by means of the verification of the activities that are being developed at the time and according to the following actions:

- Verify the existence and content of the results report from the laboratory of the lixiviated or worn out mineral
- Verify that the recollected information in the studies contains: climatic aspects, Edaphic aspects
- Geotechnical aspects, hydrologic and wildlife aspects, is considered in the lixiviation system project.
- Verify the determination of the magnitude of physical risks, and the project criteria of the HL
- Verify that the indicated site preparation measures indicated are met
- Verify at the end of operations the existence and content of the report of the characterisation of the deepest part of the ground
- Verify the existence and content in the conservation and recovery projects or special management and habitat conservation measures
- Verify the existence and contents of the biannual monitoring reports of the underground and superficial bodies of water
- Verify the existence and content of the biannual register of the observations from the topographical witnesses
- Verify the existence of the information of the procedures for the characterisation of the lixiviated or worn out materials as they were generated, as well as the procedures to stabilize the lixiviated or wornout materials
- Verify the existence of prevention or control measures for the contamination of the superficial bodies of water that guarantee that they will not be affected
- Verify that the temporary site for the recovered grounds metes the protection measures necessary to avoid loss because of aeolic or pluvial

- Verify the existence and contents of the study in which the tree and biological species of special interest susceptible to transfer and those with any kind of regional or biological value
- Verify the surface to relocate, transfer, reforestation and protection of the individual species with any risk category
- Verify the zones for the recovered vegetation and the protection programme
- Verify the existence and content of a method that guarantees a survival rate of 95% or higher of the relocated or transferred species
- Verify through the binnacle, that the disassembly and vegetation removal is or was performed
- Verify the measures that limit the access to the wildlife to the cyanide solutions
- Verify the specifications established herein
- Verify that the coating of the HL is waterproof from beginning to end of the site monitoring
- Verify the fulfilment of the measures specified in this section
- Verify the fulfillment of the specified herein
- Verify the register of the pH values of the cyanide solutions according to that established herein
- Verify the existence and content of the reports from a credited and approved land, in which lixiviated or worn out mineral, once its value recovery has ended
- Verify the fulfillment of the specifications
- Verify the fulfillment of the measures
- Verify the existence and the content in the annual monitoring programme for the closing stage
- Verify the existence and content of the reports of the sensor and topographical witness monitoring

- Verify the established in this section
- Verify the species protection of endangered species monitoring actions.

The verification unit as well as the PROFEPA can perform the sampling, laboratory analysis and field studies considered necessary to determine the conformity of the MOR. The methods employed must be documented and agreed with the evaluated instance.

When the result of the verification a technical report of non-conformities is generated, the evaluating instance will notify the user within the next five natural days, and will programme another verification visit to evaluate its fulfillment.

The verdicts of the verification units will be recognised in the terms that the authorities determine.

20.4.13 Agreement Level with International Regulation and Guidelines and Mexican Regulations

This MOR is in agreement with some legal dispositions about the environmental protection of mining activities, established in Title 40, section 445A.350-445A.447 Public Safety and Health (Water) of the Administrative Code of the State of Nevada. Administrative Code of the USA.

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20.4.15 Observation of the Regulation

The surveillance of the fulfillment of the present MOR corresponds to the Environment and Natural Resources Secretary, by conduct of the Federal Environmental Protection Attorney's Office, whose personnel will perform inspection duties and surveillance that are necessary, as well as the National Water Commission in the field of interest. The violations will be sanctioned according to the General Ecological Balance and Environmental Protection Law for the Prevention and Management of Integral Residues, The National Waters Law, General Wildlife Law and other legal orders that apply.

21 CAPITAL AND OPERATING COST ESTIMATE

21.1 Summary of Project Initial Capital Requirements

The summary of the process plant and HL pad initial capital requirements is presented in the following table:

Table 21.1-1: Initial Capital Cost Summary

Description	Total Cost (USD)
Process Plant & HL Pad	31,337,864
Water Supply Line	650,000
Power Supply (Generators – Initial Payment)	258,824
Property Associated Costs	1,000,000
Owner's Costs	1,800,000
Total Initial Capital Cost Estimate	**35,046,688**

Due to fluctuations in the South African Rand (ZAR) to USD exchange rate, GoGold has instructed MDM to use a fixed exchange rate of ZAR 8.75 : USD 1.00.

21.1.1 Process Plant Initial Capital Cost Estimate

The process plant and HL pad capital cost estimate for the Parral Tailings Plant has been prepared to a PFS level of accuracy of 20% and according to the scope as detailed in Table 21.1.1-1.

Table 21.1.1.1-1: Process Plant and HL Initial Capital Cost Estimate

Description	Amount (USD)	Cont. (%)	Total Cost (USD)
Mechanical Equipment	7,168,210	13	8,100,077
HL Pad (Lining &Waterproof)	2,662,417	14	3,035,156
HL Installation	235,285	14	268,224
Earthworks (Phase I & Ponds)	2,439,126	19	2,902,559
Civil (Supply & Install)	1,551,200	18	1,830,416
Plate Work	463,242	17	541,993
Structural Steel	2,688,000	18	3,171,840
SMPP Installation	371,821	17	435,030
Electrical (E)	835,173	14	952,098
C&I	419,025	14	477,688
E, C&I Installation	200,576	14	228,657
Piping – Process Plant	716,821	17	838,681
Piping – HL Irrigation & Drain.	230,241	17	269,382
Valves	83,145	14	94,785
Infrastructure Cost	1,012,429	18	1,194,666
Transportation	570,836	17	667,878
Commissioning Spares	179,205	17	209,670
Strategic & Operating Spares	143,364	17	167,736
First Fills	458,665	15	527,465
P&Gs - Earthworks	247,706	19	294,770
P&Gs – Civil	155,120	18	183,042
P&Gs – SMPP	37,182	17	43,503
P&Gs – E, C&I	519,811	14	592,584
EPCM	3,918,149	10	4,309,964
Total Process Plant and HL Initial Capital Cost Estimate			**31,337,864**

*Note: Amounts have been rounded for presentation. Rounding may result in inaccurate summing.

21.1.2 Basis of Costing

The accuracy of the estimates is considered to be ± 20%.

The pricing basis used is an engineering, procurement and construction management (EPCM) basis.

Costs are indicated in USD.

Cost build-ups have generally been done in either ZAR or Mexican Peso (MXN) and converted to USD at an exchange rate of ZAR 8.75 : USD 1.00 and MXN 12.75 : USD 1.00 respectively. No provision has been made for cost escalation or exchange rate fluctuations. Any rate fluctuations, whether positive or negative, will be for GoGold's account.

Capital cost estimates for the identified disciplines have been estimated by MDM as per the following:

<u>Mechanical Equipment</u>

Supplier quotations have been obtained for all major mechanical equipment ex works Mexico. Where local supply could not be established, quotations have been obtained ex works the USA. Minor mechanical equipment such as safety showers, extraction fans and other small items have been based on MDM's data base (<2 years).

Mechanical cost savings are possible by obtaining costs of local supply of the minor mechanical equipment, as comparison indicates that local Mexican supply is cheaper than that obtained in South Africa.

HL Pad (Lining and Waterproof)

The HL design is based on a 5-phase approach, with Phase 1 equivalent to an area of 25 ha. Material quantities were calculated from first principles for the first phase of the HL pad as a capital cost. The remainder of the HL pad quantities have been captured as sustaining capital, payable in years 3, 5, 8 and 10 respectively.

Costs have been based on supplier quotations from local contractors to the Project area.

Earthworks (Phase I and Ponds)

Material quantities have been based on the cut and fill volumes required for the Phase 1 HL construction and process ponds. See Figure 18.1-1 for the HL design and Phase 1 area.

Costs have been based on supplier quotations from local contractors to the Project area.

Civil

Costs are based on bills of quantities as determined from layout drawings and have been priced using supplier quotations from local contractors to the Project area.

Structural Steel and Plate Work

Costs are based on bills of quantities as determined from layout drawings and have been priced using vendor quotations from South African suppliers. During the FEED phase of the Project, local Mexican suppliers will be identified and the capital cost of the structural steel and plate work supply reviewed.

Cost savings are possible by obtaining costs from local structural steel and plate work contractors.

Tank Work

Costs are based on a quantified tank schedule calculated based on first principles and have been priced using supplier quotations from local suppliers to the Project area.

Electrical

Costs are based on bills of quantities as determined from layout drawings and have been priced using vendor quotations from South African suppliers. During the FEED phase of the Project, local Mexican suppliers will be identified and the capital cost of the electrical supply reviewed.

Costs include a containerised motor control centre (MCC) and required transformers.

Electrical cost savings are possible by obtaining costs of local supply of the electrical components, as comparison indicates that local Mexican supply is cheaper than that obtained in South Africa.

C&I

Costs for the process plant C&I have been obtained from South African suppliers and based on instrumentation as detailed in the P&IDs specific to this PFS.

C&I cost savings are possible by obtaining costs of local supply of the C&I components, as comparison indicates that local Mexican supply is cheaper than that obtained in South Africa.

Piping – Process Plant

For the purposes of the PFS, the process plant piping has been factorised to a value of 10% of the mechanical equipment supply.

Cost savings are possible by obtaining actual quotations based on the piping schedule as compiled from the P&IDs.

Piping – HL Irrigation and Drainage

The quantities of HL irrigation and drainage piping has been estimated based on the HL site plan drawing. These have been calculated for the first phase of the HL pad as a capital cost. The remainder of the irrigation and drainage piping has been captured as sustaining capital over the LoM.

Costs of piping specific to the HL pad have been sourced from MDM's data base and based on South African supply costs.

Certain cost savings are possible by obtaining costs of local supply of the irrigation and drainage piping, as comparison indicates that local Mexican supply is cheaper than that obtained in South Africa.

Valves

Costs of valves have been used from MDM's data base and based on South African supply costs. The valve list has been compiled from the process plant P&IDs.

Cost savings are possible by obtaining costs of local supply of the valves, as comparison indicates that local Mexican supply is cheaper than that obtained in South Africa.

Infrastructure Cost

Infrastructure costs have been based on an estimate of certain buildings and services provided by means of mobile trailers (specifically the MCC, on-site administration office, kitchen and mess facilities, medical facilities and general storage). All other buildings (including the security house, metallurgical laboratory, workshops, change house/ablution facilities, laundry room and stores) will be permanent brick buildings.

Transportation

Transport costs have been calculated based on a factor of 4% of the supply of mechanical equipment.

Commissioning Spares

Costs of commissioning spares have been calculated based on a factor of 2.5% of the mechanical equipment supply.

Cost savings are possible by obtaining actual quotations for the supply of spares required during the commissioning phase of the Project.

Strategic and Operating Spares

Costs of strategic and operating spares have been calculated based on a factor of 2% of the mechanical equipment supply.

Cost savings are possible by obtaining actual quotations for the supply of the strategic and operating spares required.

First Fills

The first fills have been included in the process plant and HL pad cost estimate values in Table 21.1.2-1 and represented in the financial model in Section 22 of this document. The total cost for the first fills, based on a 1 month requirement, is detailed in the following table.

Table 21.1.2-1: First Fills Summary

Description	Required (t)	Unit Cost (USD/t)	Total Cost (USD)
Caustic	2	1,080	2,160
Cement	910	99	90,090
Cyanide	61	3,200	195,200
Diatomaceous Earth	1	714	714
Lead Nitrate	4	0.26	1
Sulphuric Acid	25	520	13,000
Zinc	45	3,500	157,500
Total First Fills Estimate		**1,048**	**458,665**

Preliminary and General (P&Gs)

Contractor P&Gs for the electrical and C&I installation have been based on costing derived from first principles. All other contractor P&Gs have been assumed at a 10% factor of supply (namely HL pad liner installation and SMPP contractor). Once the local contractor has been identified for this portion of the works, actual costs will be obtained for the associated P&Gs.

EPCM

EPCM costs have been developed using a project duration of 16 months (12 months construction, including a 3 month FEED phase; 2 months commissioning and 2 month close-out). Every endeavour would be made to attempt to shorten this projected timeline.

The estimated cost has been developed using current MDM discipline charge out rates. These rates are reviewed annually in March of each year and are adjusted to meet industry standards. EPCM costs as reflected in this PFS have not taken rate escalation as of March 2013 into account.

For site services such as the construction labour, supervision and site project manager, local Mexican rates have been obtained.

A 10% contingency has been applied to the EPCM cost as the accuracy of the estimates is considered to be ± 20%.

Contractor's margin

No "contractor's margin" or mark-up has been allowed for in the cost build-up.

21.1.3 Exclusions

The following items have been specifically excluded from the capital cost estimate:

- Fuel storage and distribution – to be provided by diesel supplier
- Cement storage silo – to be provided by cement supplier.

21.1.4 Mine Capital Cost

The mining operation will mainly be using rental mining equipment. However some capital costs will be incurred for minor equipment and supplies. Table 21.1.4-1 presents the estimated capital cost for the mining operation. In subsequent years it will be necessary to replace pickup trucks and dewatering pumps. Total capital expenditures by year are shown in Table 21.1.4-2. This has been included in Table 22.3.2-1 of Section 21 as sustaining capital within the first year of operation.

Table 21.1.4-1: Mine Capital Cost

Description	Unit	Unit Cost (USD)	Total Capital (USD)
4WD Pickup Trucks	$/ea	35,000	140,000
Pumping Equipment	$/lot	50,000	50,000
Surveying Equipment	$/lot	30,000	30,000
Office Supplies	$/lot	25,000	25,000
Safety Supplies	$/lot	10,000	10,000
Software	$/lot	50,000	50,000
Contractor Mobilisation	$/lot		13,700
Contingency		10%	32,000
Total Mine Capital Cost			**350,700**

Table 21.1.4-2: Annual Mining Cost

MINING COSTS				Q1	Q2	Q3	Q4	2	3	4	5	6	7	8	9	10	11	12
	Equipment Rental																	
2	D8R	$/day	$1,255	$ 195,765	$ 195,765	$ 195,765	$ 195,765	$ 783,059	$ 783,059	$ 783,059	$ 783,059	$ 783,059	$ 783,059	$ 783,059	$ 783,059	$ 783,059	$ 783,059	$ 783,059
1	950 FEL at HL	$/day	$758	$ 59,096	$ 59,096	$ 59,096	$ 59,096	$ 236,386	$ 236,386	$ 236,386	$ 236,386	$ 236,386	$ 236,386	$ 236,386	$ 236,386	$ 236,386	$ 236,386	$ 236,386
	CAT 375	$/day	$1,302	$ 101,553	$ 101,553	$ 203,106	$ 203,106	$ 812,424	$ 812,424	$ 812,424	$ 812,424	$ 812,424	$ 812,424	$ 812,424	$ 812,424	$ 812,424	$ 812,424	$ 406,212
1	Grader 14H	$/day	$773	$ 60,320	$ 60,320	$ 60,320	$ 60,320	$ 241,280	$ 241,280	$ 241,280	$ 241,280	$ 241,280	$ 241,280	$ 241,280	$ 241,280	$ 241,280	$ 241,280	$ 241,280
	Truck 50t	$/day	$485	$ 130,862	$ 247,184	$ 392,587	$ 436,208	$ 1,744,831	$ 1,744,831	$ 1,744,831	$ 1,744,831	$ 1,744,831	$ 1,744,831	$ 1,744,831	$ 1,744,831	$ 1,744,831	$ 1,744,831	$ 1,091,305
	sub-total		$ 44,014,915	$ 547,596	$ 663,918	$ 910,874	$ 954,495	$ 3,817,979	$ 3,817,979	$ 3,817,979	$ 3,817,979	$ 3,817,979	$ 3,817,979	$ 3,817,979	$ 3,817,979	$ 3,817,979	$ 3,817,979	$ 2,758,242
	Unit Cost	$/t mat'l	$2.13	$3.82	$2.32	$2.07	$2.08	$2.07	$2.11	$2.09	$2.09	$2.11	$2.10	$2.12	$2.12	$2.11	$2.10	$2.36
		$/t ore	$2.16															
	GoGold Supervision labour																	
1	Superintendent	$/month	5,966	$17,898	$17,898	$17,898	$17,898	$71,594	$71,594	$71,594	$71,594	$71,594	$71,594	$71,594	$71,594	$71,594	$71,594	$71,594
1	Foreman	$/month	4,355	$13,065	$13,065	$13,065	$13,065	$52,262	$52,262	$52,262	$52,262	$52,262	$52,262	$52,262	$52,262	$52,262	$52,262	$52,262
2	Field Supervsiors	$/month	4,355	$26,131	$26,131	$26,131	$26,131	$104,524	$104,524	$104,524	$104,524	$104,524	$104,524	$104,524	$104,524	$104,524	$104,524	$104,524
1	Chief Engineer	$/month	5,161	$15,482	$15,482	$15,482	$15,482	$61,928	$61,928	$61,928	$61,928	$61,928	$61,928	$61,928	$61,928	$61,928	$61,928	$61,928
1	Surveyor	$/month	3,550	$10,649	$10,649	$10,649	$10,649	$42,596	$42,596	$42,596	$42,596	$42,596	$42,596	$42,596	$42,596	$42,596	$42,596	$42,596
1	Survey Tech	$/month	2,447	$7,340	$7,340	$7,340	$7,340	$29,360	$29,360	$29,360	$29,360	$29,360	$29,360	$29,360	$29,360	$29,360	$29,360	$29,360
	sub-total		$ 4,347,155	$ 90,566	$ 90,566	$ 90,566	$ 90,566	$ 362,263	$ 362,263	$ 362,263	$ 362,263	$ 362,263	$ 362,263	$ 362,263	$ 362,263	$ 362,263	$ 362,263	$ 362,263
	Unit Cost	$/t mat'l	$0.21	$0.63	$0.32	$0.21	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.20	$0.31
		$/t ore	$0.21															
	Other Operating Costs																	
	Support Equipment	$/month	$1,000	$3,000	$3,000	$3,000	$3,000	$12,000	$12,000	$12,000	$12,000	$12,000	$12,000	$12,000	$12,000	$12,000	$12,000	$12,000
	Pit water pumping	$/month	$3,000	$9,000	$9,000	$9,000	$9,000	$36,000	$36,000	$36,000	$36,000	$36,000	$36,000	$36,000	$36,000	$36,000	$36,000	$36,000
	Supplies, assays,	$/month	$3,000	$9,000	$9,000	$9,000	$9,000	$36,000	$36,000	$36,000	$36,000	$36,000	$36,000	$36,000	$36,000	$36,000	$36,000	$36,000
1	Water Truck	$/day	$800	$ 62,400	$ 62,400	$ 62,400	$ 62,400	$ 249,600	$ 249,600	$ 249,600	$ 249,600	$ 249,600	$ 249,600	$ 249,600	$ 249,600	$ 249,600	$ 249,600	$ 249,600
4	Pickup trucks (mining)	$/day	$80	$ 24,960	$ 24,960	$ 24,960	$ 24,960	$ 99,840	$ 99,840	$ 99,840	$ 99,840	$ 99,840	$ 99,840	$ 99,840	$ 99,840	$ 99,840	$ 99,840	$ 99,840
	Contingency		5%	$37,326	$43,142	$55,490	$57,671	$230,684	$230,684	$230,684	$230,684	$230,684	$230,684	$230,684	$230,684	$230,684	$230,684	$177,697
	sub-total		$ 7,879,447	$ 145,686	$ 151,502	$ 163,850	$ 166,031	$ 664,124	$ 664,124	$ 664,124	$ 664,124	$ 664,124	$ 664,124	$ 664,124	$ 664,124	$ 664,124	$ 664,124	$ 611,137
	Unit Cost	$/t mat'l	$0.38	$1.02	$0.53	$0.37	$0.36	$0.36	$0.37	$0.36	$0.36	$0.37	$0.37	$0.37	$0.37	$0.37	$0.36	$0.52
		$/t ore	$0.39	$1.08	$0.59	$0.40	$0.37	$0.37	$0.37	$0.37	$0.37	$0.37	$0.37	$0.37	$0.37	$0.37	$0.37	$0.54
Total Mining Cost																		
			$ 56,241,517	$ 783,848	$ 905,986	$ 1,165,290	$ 1,211,091	$ 4,844,366	$ 4,844,366	$ 4,844,366	$ 4,844,366	$ 4,844,366	$ 4,844,366	$ 4,844,366	$ 4,844,366	$ 4,844,366	$ 4,844,366	$ 3,731,642
	Mining Unit Cost	$/t mat'l	$2.72	$5.46	$3.17	$2.65	$2.64	$2.62	$2.68	$2.65	$2.65	$2.68	$2.67	$2.69	$2.69	$2.68	$2.66	$3.20
	Mining Unit Cost	$/t ore	$2.76	$5.81	$3.55	$2.88	$2.69	$2.69	$2.69	$2.69	$2.69	$2.69	$2.69	$2.69	$2.69	$2.69	$2.69	$3.31

MINING CAPITAL COSTS			Q1	Q2	Q3	Q4	2	3	4	5	6	7	8	9	10	11	12
Pickup trucks	$/ea	$35,000	$ 140,000								$ 140,000						
Pumping Equipment	$/lot	$50,000	$ 50,000					$ 50,000			$ 50,000			$ 50,000			
Survey equipment	$/lot	$30,000	$ 30,000								$ 30,000						
Office supplies	$/lot	$25,000	$ 25,000														
Safety supplies	$/lot	$10,000	$ 10,000														
Software	$/lot	$50,000	$ 50,000														
Contractor Mobilize	$/lot	$13,700	$ 13,700														
Contingency		10%	$ 32,000	$ -	$ -	$ -	$ -	$ 5,000	$ -	$ -	$ 22,000	$ -	$ -	$ 5,000	$ -	$ -	$ -
Total capital		$ 702,700	$ 350,700	$ -	$ -	$ -	$ -	$ 55,000	$ -	$ -	$ 242,000	$ -	$ -	$ 55,000	$ -	$ -	$ -

21.1.5 Owner's Costs

A total allowance of USD 1.8 million has been allocated for owner's costs as provided by GoGold.

21.1.6 Mine Closure Cost

A total allowance of USD 1.8 million has been allocated for mine closure at the end of the Project.

21.1.7 Plant Salvage Cost

A total of USD 1.67 million has been calculated as a plant salvage cost at the end of the LoM. This is based on 10% of initial capital (excluding the civil and earthworks and heap leach components).

21.1.8 General

Taxes

All cost estimates exclude any taxes applicable in either the country of source, or the Project country.

Insurances

General All Risks, Construction, Professional Indemnity, Political Risk and Advance Loss of Profits insurances have been allowed for in the EPCM costs.

Contingency

Contingency is included in these estimates to cover minor errors and omissions. The various percentages are calculated based on a contingency calculation matrix and can be seen in the cost summaries.

21.2 Summary of Project Operating Cost Estimate

The overall operating costs for the process plant and HL operation have been calculated in accordance to the mine plan developed by P&E and is summarised in Table 21.2-1. This table shows the overall operating costs per tonne of tailings material processed.

Table 21.2-1: Process Plant Operating Cost Summary

Description	Cost per Tonne (USD/t)
Mining	2.76
Process Plant	11.22
Process Plant G&A	0.28
Total Operating Cost	**14.26**

*Note: Operating costs per tonne have been calculated based on a weighted average over the LoM.

21.2.1 Process Plant Operating Cost Estimate

The operating cost as detailed in Table 21.2.1-1 is the overall LoM operating cost average based on the overall LoM production schedule.

Table 21.2.1-1: Process Plant Operating Cost Summary

Description	Cost per Tonne Processed Material (USD/t)
Cement	1.47
Cyanide	3.91
Zinc (Zones 1 & 2)	2.61
Zinc (Zone 3)	0.93
Caustic	0.03
Sulphuric Acid	0.21
Water Supply	0.28

Description	Cost per Tonne Processed Material (USD/t)
Maintenance	0.42
Labour	0.43
Power (Diesel Generators)	1.07
Assaying	0.04
Other	0.09
Contingency	10%
Total Average Operating Cost over LoM	**11.22**

*Note: Operating costs per tonne have been calculated based on a weighted average over the LoM.

Labour

The plant labour complement is summarised in Table 21.2.1-2.

Table 21.2.1-2: Plant Labour Complement

Description	No. Personnel	Cost per Tonne Processed Material (USD/t)
Metallurgist	1	0.02
Engineering	1	0.02
Supervisor	4	0.06
Operator	13	0.09
Artisan	4	0.02
Laboratory Technician	4	0.04
Labour	25	0.10
Security	16	0.08
Total Plant Labour Operating Cost	**68**	**0.43**

21.2.2 Mine Operating Cost Estimate

The mining operation will be Owner operated and managed using rental mining equipment. Table 21.2.2-1 summarises the average unit mining cost over the LoM. The annual mining costs do not fluctuate significantly throughout the mine life since annual tonnages moved are roughly similar and haul distances to the HL site are fairly consistent.

Table 21.2.2-1: Unit Mining Cost

Description	Unit	USD/t Material	USD/t Ore
Mining Equipment	$/t	2.13	2.16
Supervision	$/t	0.21	0.21
Other Costs	$/t	0.38	0.39
Total Unit Cost	**$/t**	**2.72**	**2.76**

The following sections describe the detail of the operating cost estimate.

<u>Mining Equipment Rental Cost</u>

Table 21.2.2-2 presents the monthly and daily rental rates as provided by Prodessa proyecto de desarrollo Santiago (Prodessa) via cost quotations dated 15 November 2012 and 22 November 2012. A currency exchange rate of MXN 12.75 (Mexican peso) per USD was assumed and no *Imposta sul Valore Aqquinto* (IVA), or value added tax (16%) has been included.

Table 21.2.2-2: Mining Equipment Rental Rates*

Equipment	**Unit Price** (30 days/month) **(MXN/month)**	**Daily Rate (USD/day)**
CAT D8R Dozer	480,000	1,254
CAT 950 Front End Loader, 3 m^3 (at HL Stockpile)	289,800	757
CAT 375 Backhoe, 5 m^3	498,000	1,302
CAT Grader 14H	295,800	773
Haul Truck 50 t Highway	185,355	485

*Rental rates include, operator, maintenance, fuel, parts and supplies.

Based on the equipment productivity estimates described in Section 16, annual equipment fleet requirements have been estimated. Daily equipment usage is multiplied by the daily equipment rental rate (Table 21.2.2-2) to determine the annual mining equipment cost. Table 21.1.5-2 summarises the costs per annum over the life of the project.

Mining Supervision Cost

The Owner will be required to provide the management, supervisory, and technical personnel to manage the mining operation. It is expected that the management team will consist of Mexican nationals and no expatriates will be required for the mining operation. Table 21.2.2-3 presents the monthly wages assumed and payroll burden calculation as provided by GoGold management.

Table 21.2.2-3: Salary and Wages Rates

Personnel	No.	NET /Month (MXN/m)	Total Taxes (MXN/m)	Total Cost (MXN/m)	Total Cost (USD/m)
Superintendent	1	60,000	16,068	76,068	5,966
Foreman	1	40,000	15,528	55,528	4,355
Field Supervisors	2	40,000	15,528	55,528	4,355
Chief Engineer	1	50,000	15,798	65,798	5,160
Surveyor	1	30,000	15,258	45,258	3,549
Survey Tech.	1	20,000	11,195	31,195	2,446
Total Mine	**7**				

Other Mining Costs

To support the mining operation and office staff, other operating costs will be incurred. These include items listed in Table 21.2.2-4.

A contingency of 5% is applied to all of the mining operating costs, including major equipment rental costs and supervision labour costs.

Table 21.2.2-4: Other Mine Operating Costs

Description	Unit	Cost (USD/month)
Support Equipment	USD / month	1,000
Pit Water Pumping	USD / month	3,000
Supplies, Assays	USD / month	3,000
Pickup Trucks (Mining)	USD / day / vehicle	800
Contingency	5%	80

21.2.3 General and Administration Operating Cost Estimate

The G&A cost as summarised in Table 21.2.3-1 is based on the overall LoM.

Table 21.2.3-1: G&A Operating Cost Estimate

Description	Cost per Tonne Processed Material (USD/t)
General Plant Manager	0.04
Account Payable	0.01
Account Manager	0.02
Human Resources	0.02
Warehouse Supervisor	0.01
Purchasing	0.01
Receptionist	0.01
Administration Manager	0.02
Public Relation / Sustainability	0.02
General Office Expenses	0.03
Insurance	0.02
Other	0.04
Contingency	10%
Total Plant G&A Operating Cost	**0.28**

*Note: Operating costs per tonne have been calculated based on a weighted average over the LoM.

22 ECONOMIC ANALYSIS

22.1 Project Economics and Conclusion

The economic evaluation of the Parral Tailings Project as presented in this PFS and prepared jointly by GoGold and MDM assumes the project will be 100% equity financed. GoGold considers the project to be a good candidate for a combination of a dollar loan, equipment lease and equity financing. The effect of including debt financing on the Base Case economics is to increase the rate of return to the equity owners by virtue of a leveraging effect.

For the purposes of the PFS, the evaluation is based on 100% of the project cash flows before distribution of profits to the equity owners. Before-tax annual cash flows are discounted at rates of 0%, 5% and 10%.

The results of the economic analysis indicate that exploitation of the Parral Tailings silver/gold tailings deposit is economically viable and should proceed.

22.2 Base Case Economics

The Base Case 100%-equity financed scenario, using a constant gold price of USD 1,475/oz. and silver price of USD 29/oz., indicates a before-tax internal rate of return (IRR) of 80% and an after-tax IRR of 54%. Cumulative before-tax cash flows are USD 230.5 million over a 12 year LoM. The initial capital investment of USD 36 million is paid back within 2 years.

A constant gold price of USD 1,475/oz. and silver price of USD 29/oz. has been applied and is considered by GoGold to be a reasonable estimate for the average LoM price. This is based on a moving 3-year price average for each metal. Forward sales of a significant portion of gold and silver production could achieve a higher effective average price.

The Base Case Cash Flow Model is included in Table 22.2-1.

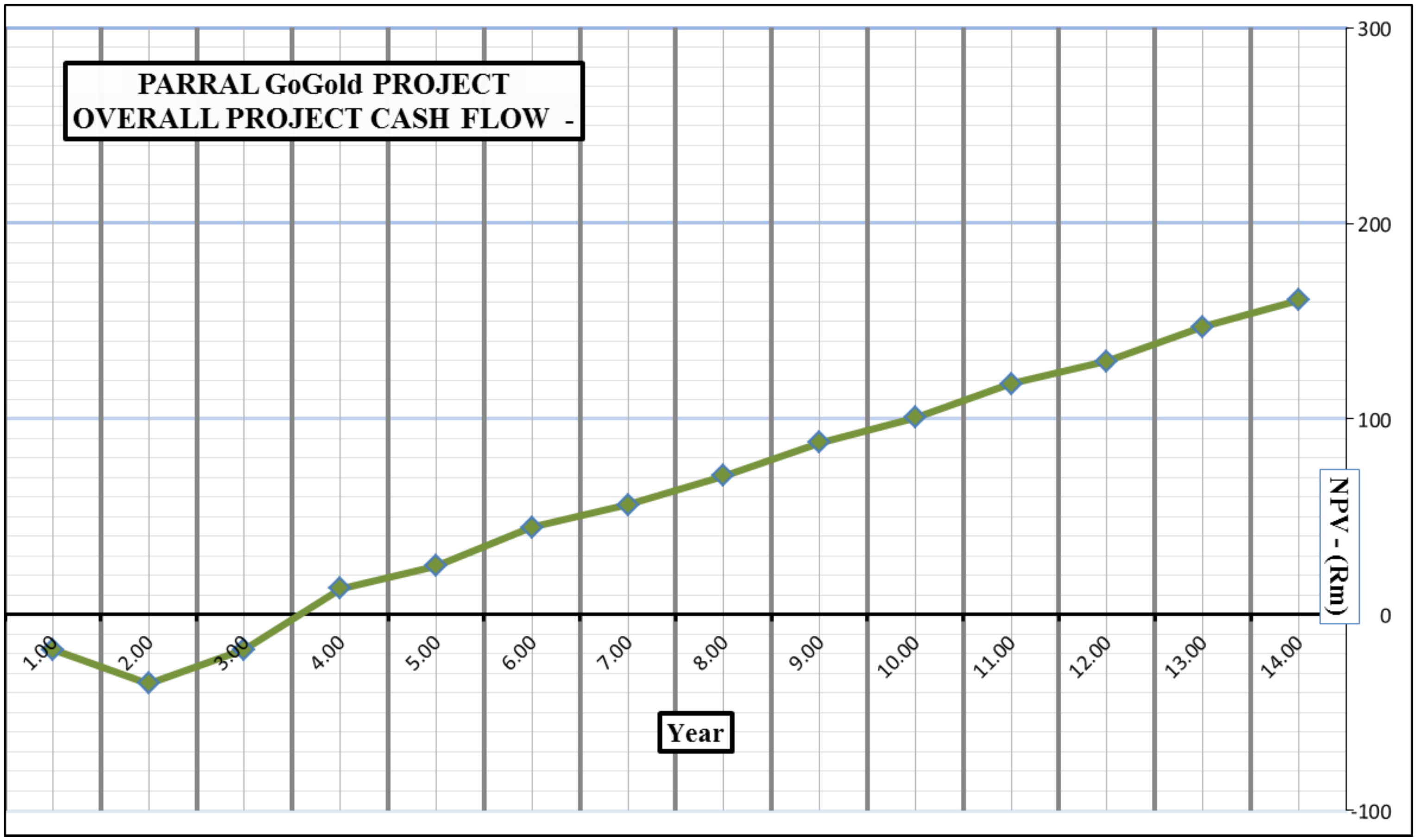
Table 22.2-1: Base Case Cashflow

Model

	YEAR			2013	2014				2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
					Q1	Q2	Q3	Q4												
	CAPITAL	62.606	($m)																	
	Mining	0.703	($m)		0.351				0.351		0.055			0.242			0.055			
	Process Plant	59.975	($m)	33.247	0.159	0.159	0.159	0.159	0.636	0.637	7.443	0.400	5.491	0.400	0.400	5.491	0.400	5.430	0.000	0.000
	Owners Costs	1.800	($m)	1.800					0											
	Working Capital	0.000	($m)		1.400				1.4											-1.40
	Closure Costs	1.800	($m)						0											1.800
	Salvage Costs	-1.672	($m)						0											-1.672
	TOTAL	62.606	($m)	-35.047	-1.910	-0.159	-0.159	-0.159	-2.387	-0.637	-7.498	-0.400	-5.491	-0.642	-0.400	-5.491	-0.455	-5.430	0.000	1.272
	INFLATION	0.00	(%p.a.)	-62.606																
	PROJECT LIFE	12.00	(yrs)																	
	TAX RATE	30.00	(%)																	
	DISCOUNT RATE	0.00	(%)																	
	Base Tonnage		(t/h)																	
	Operating hrs p.a.		(h/a)																	
	Au Grade		(g/t)		0.045	0.047	0.048	0.051		0.089	0.257	0.340	0.376	0.357	0.390	0.394	0.375	0.364	0.352	0.348
	Ag Grade		(g/t)		64.020	65.971	66.962	68.689		68.784	41.376	37.853	31.532	29.436	30.851	31.85	31.269	30.624	31.054	38.202
	REVENUES		*Production Phasing*		135,000	255,000	405,000	450,000	1,245,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,125,811
Gold	- RECOVERY	65.00	(%) / (oz)		127	250	403	478	1,259	3,348	9,667	12,790	14,144	13,429	14,670	14,821	14,106	13,692	13,241	8,187
	- % of METAL VALUE RECEIVED	100.0	(%)						0.0											
	- PRICE	1475	($/t)						0.0											
	- TREATMENT	7.00	($) / (oz)						0.0											
	- REVENUE		($m)		0.186	0.367	0.592	0.702	1.848	4.915	14.192	18.775	20.763	19.714	21.536	21.757	20.708	20.100	19.438	12.019
Silver	- RECOVERY	58.00	(%) / (oz)		161,164	313,697	505,712	576,392	1,556,965	2,308,758	1,388,799	1,270,548	1,058,382	988,029	1,035,524	1,069,056	1,049,554	1,027,905	1,042,338	801,992
	- % of METAL VALUE RECEIVED	100.0	(%)						0.0											
	- PRICE	29.00	($/t)						0.0											
	- TREATMENT	0.50	($) / (oz)						0.0											
	- REVENUE		($m)		4.593	8.940	14.413	16.427	44.373	65.800	39.581	36.211	30.164	28.159	29.512	30.468	29.912	29.295	29.707	22.857
	SILVER EQUIVALENT OUNCES	1,772,130							1,619,893	2,476,150	1,872,169	1,910,026	1,765,569	1,659,480	1,769,042	1,810,097	1,754,860	1,712,522	1,704,385	1,211,364
	TOTAL REVENUE	612	($m)	0.00	4.780	9.308	15.005	17.129	46.221	70.714	53.773	54.986	50.927	47.873	51.049	52.225	50.620	49.396	49.144	34.876

	OPERATING COSTS		Annual																	
	Mining		($/t)		5.81	3.55	2.88	2.69		2.69	2.69	2.69	2.69	2.69	2.69	2.69	2.69	2.69	2.69	3.31
$/t	Process Plant		($/t)		10.62	9.85	9.53	9.48		9.48	11.20	11.06	11.59	11.59	11.59	11.59	11.59	11.59	11.59	11.88
Milled	Process Plant G&A's		($/t)		0.86	0.46	0.29	0.26		0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.41
	TOTAL OPERATING COSTS /t	($/t)			17.29	13.86	12.70	12.43		12.43	14.14	14.01	14.54	14.54	14.54	14.54	14.54	14.54	14.54	15.60
	Mining	*2.76*	($m)		0.784	0.905	1.166	1.211	4.067	4.842	4.842	4.842	4.842	4.842	4.842	4.842	4.842	4.842	4.842	3.726
	Process Plant	*11.22*	($m)		1.434	2.513	3.861	4.266	12.073	17.064	20.151	19.911	20.856	20.856	20.856	20.856	20.856	20.856	20.856	13.374
	Process Plant G&A's	*0.28*	($m)		0.117	0.117	0.117	0.117	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467
					2.335	3.535	5.144	5.593	16.607	22.373	25.460	25.220	26.165	26.165	26.165	26.165	26.165	26.165	26.165	17.567
	TOTAL OPERATING COSTS	14.25		0.00	2.335	3.535	5.144	5.593	16.607	22.373	25.460	25.220	26.165	26.165	26.165	26.165	26.165	26.165	26.165	17.567
	FINANCIAL																			
INCOME			($m)	0.0	2.4	5.8	9.9	11.54	29.61	48.34	28.31	29.77	24.76	21.71	24.88	26.06	24.45	23.23	22.98	17.31
DEPRECIATION			($m)	0.000	-0.730	-0.755	-0.742	-0.730	-2.957	-3.134	-3.198	-4.031	-4.081	-4.865	-4.972	-5.052	-6.425	-6.577	-9.292	-8.020
TAXABLE INCOME			($m)	0.00	1.71	5.02	9.12	10.81	26.66	45.21	25.11	25.73	20.68	16.84	19.91	21.01	18.03	16.65	13.69	9.29
TAX			($m)	0.00	0.44	1.35	2.47	2.93	7.19	12.27	6.77	6.94	5.56	4.51	5.35	5.65	4.83	4.46	3.65	2.44
OPERATING CASH FLOW			($m)	0.00	2.00	4.43	7.39	8.60	22.42	36.08	21.54	22.83	19.20	17.20	19.54	20.41	19.62	18.77	19.33	14.87
NET FREE CASH FLOW			($m)	-35.05	0.09	4.27	7.23	8.45	20.03	35.44	14.04	22.43	13.71	16.56	19.14	14.92	19.17	13.34	19.33	16.14
OPERATING CASH FLOW after Royalty			($m)	0.00	1.76	3.89	6.50	7.57	19.73	31.76	18.98	20.21	17.03	15.36	17.43	18.21	17.68	16.95	17.77	13.69
NET FREE CASHFLOW after Royalty			($m)	-35.05	-0.15	3.74	6.34	7.41	17.34	31.13	11.48	19.81	11.54	14.72	17.03	12.72	17.22	11.52	17.77	13.69
CASH COST per AuEq (50)		*682.75*			696.86	541.76	489.13	465.88	512.59	451.77	679.96	660.21	740.98	788.35	739.53	722.75	745.50	763.94	767.58	725.09
CASH COST per AgEq (50)		*13.66*			13.94	10.84	9.78	9.32	10.25	9.04	13.60	13.20	14.82	15.77	14.79	14.46	14.91	15.28	15.35	14.50
CASH COST per Ag (Au bi-product credit)		*6.48*			13.33	10.10	9.00	8.49	9.48	7.56	8.11	5.07	5.10	6.53	4.47	4.12	5.20	5.90	6.45	6.92

Figure 22.2-1: Overall Project Cashflow



22.3 Capital Costs

22.3.1 Initial Fixed Capital Costs

Initial fixed capital costs, including property associated costs and owners' costs, total USD 35 million as summarised in Table 21.1-1. For mechanical equipment, the costs are the delivered and installed costs. No escalation has been assumed in the capital costs, nor allowances made for capitalised interest or country risk insurance. Interest charges and country risk insurance are treated as financing costs and considered as part of an overall financing package.

The Project construction and commissioning is assumed to occur over a 14-month period starting from the date of a decision-to-proceed. For the purposes of PFS analysis, it has been assumed that all initial capital will be expended in the 14 months immediately prior to production.

The PFS cash flows exclude the geotechnical and metallurgical testwork costs incurred to date, PFS costs and GoGold overhead.

22.3.2 Sustaining Capital Costs

Sustaining capital costs are comprised of mining related expenditures relating to the deployment of additional mining gear as well as mine development costs including haulage roads, expansion of the HL pad, replacement of the fleet of light vehicles and final site rehabilitation in order to continue mining operations, but which does not necessarily increase the plant throughput. Table 22.3.2-1 presents the details as to the composition and timing of expenditure for the sustaining capital costs.

Table 22.3.2-1: Sustaining Capital Cost Summary

Description	Production Year	Total Cost (USD)
Mining		
Phase 1	1	350,000
Phase 2	3	55,000
Phase 3	6	242,000
Phase 4	9	55,000
Process Plant		
HL - Phase 2	3	7,043,060
HL - Phase 3	5	5,090,842
HL - Phase 4	8	5,090,842
HL – Phase 5	10	5,030,297
Genset Purchase (Remaining 24 months)		473,000
Property Associated Costs		4,000,000
Total Sustaining Capital Cost Estimate		**27,430,741**

22.4 Operating Costs

The LoM operating costs for the Project are presented in Table 12.2-1 and include all mining, treatment and G&A costs, which are incurred at the mine site. The operating costs exclude depreciation, amortisation or any management services provided by GoGold.

22.5 Working Capital

During the initial weeks of mine operation while silver/gold inventory is building up in the process circuit, and before cash is received from the sale of bullion, working capital is required to meet operating expenses. Working capital is estimated to be 60 days of Year 1 operating expenses or approximately USD 1.4 million. This figure is included as part of the initial project capital cost to be financed and is shown separately on the cash flow schedules in Year 1. The working capital is assumed to be recouped in the final year of the Project.

The initial stocks of consumables and strategic spares have been provided for separately within the Project capital costs. Ongoing purchases of supplies and spares are treated as operating costs.

22.6 Silver/Gold Refining, Shipping and Insurance

Silver/Gold output from the Parral Tailings operation will be in the form of doré bars containing approximately 95% silver, the balance being primarily gold. The doré bars are not anticipated to contain any deleterious elements.

The doré will be shipped to a refinery either in Mexico or the USA. Based on typical refining charges, the breakdown of costs is set out below.

- Refining, shipping and insurance – charge USD 0.50/oz. silver
- Refining, shipping and insurance - USD 7.00/oz. gold

It is anticipated that penalties for any impurities will not be significant.

22.7 Royalties

The only royalty payable is a 12% Net Profit Interest (NPI) to the Town of Parral. No other State royalty applies to the project since it is classified as a tailings retreated project. LoM royalties payable to the Town of Parral total USD 27.03 million which equates to USD 1.33/t of ore processed.

22.8 Inflation and Exchange Rates

The Base Case cash flow projections are made in constant dollars without escalation for either costs or metal prices. All dollar amounts are reported in USA currency since metal prices are denominated in USD and the operating costs are quoted in that currency, as well as a significant portion of the capital costs.

The ZAR denominated initial capital costs aggregate ZAR 78,160,706. GoGold has instructed MDM to use an exchange rate of ZAR 8.75 / USD 1.00, which calculates a value of USD 8,932,652 for these costs. This amount represents 29% of the total initial capital costs.

The MXN denominated initial capital costs aggregate MXN 242,301,816. GoGold has instructed MDM to use an exchange rate of MXN 12.75 / USD 1.00, which calculates a value of USD 19,004,064 for these costs. This amount represents 61% of the total initial capital costs.

The balance (10%) of the initial capital costs has been quoted in USD.

22.9 Sensitivity Analysis

Several cash flow forecasts have been calculated whereby certain of the Base Case parameters were varied. In particular, the silver/gold price, capital costs and operating costs were varied. The results of the sensitivity analysis are presented graphically in Figures 22.9-1 to Figure 22.9-3 in which the sensitivity of the project to each of the varied parameters is quantified in terms of change in the undiscounted Project net present value (NPV) and change in the Project IRR.

Table 22.9-1: NPV Base Case Before and After Tax

	UNIT	NPV Before Tax (USD m)	NPV After Tax (USD m)
0%	$m	230.52	160.91
5%	$m	159.09	107.46
10%	$m	113.43	73.70
IRR	**%**	**80**	**54**

Figure 22.9-1: NPVs vs. Parameter Variance

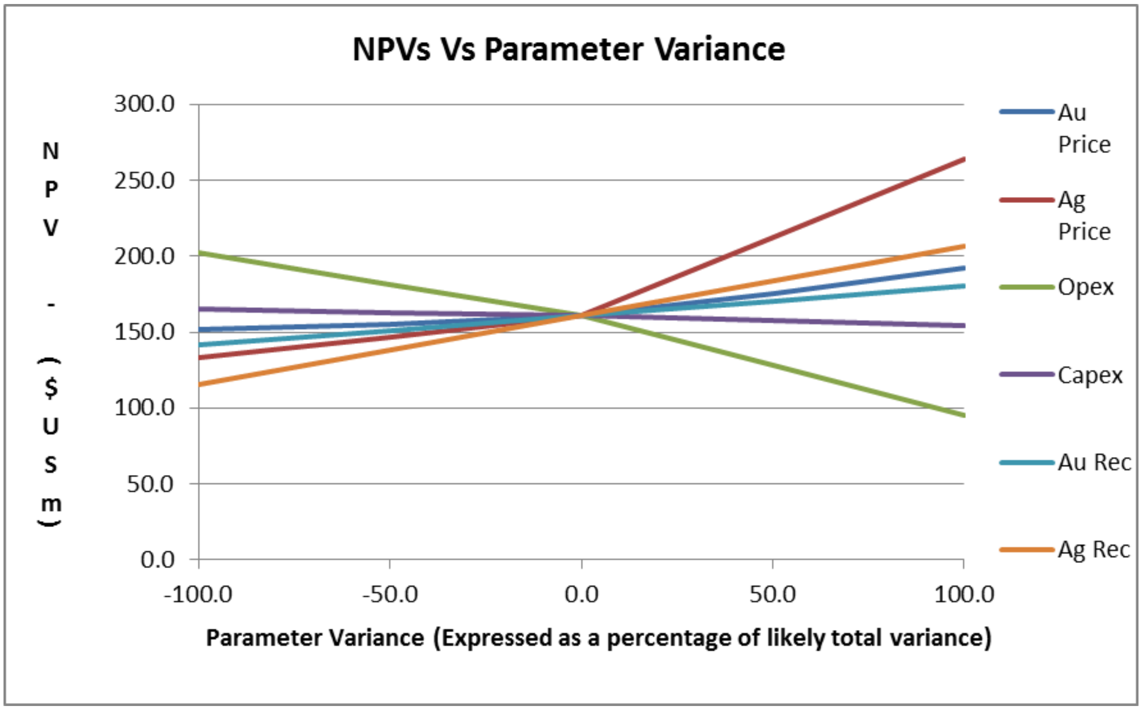


Figure 22.9-2: Before Tax IRRs vs. Parameter Variance

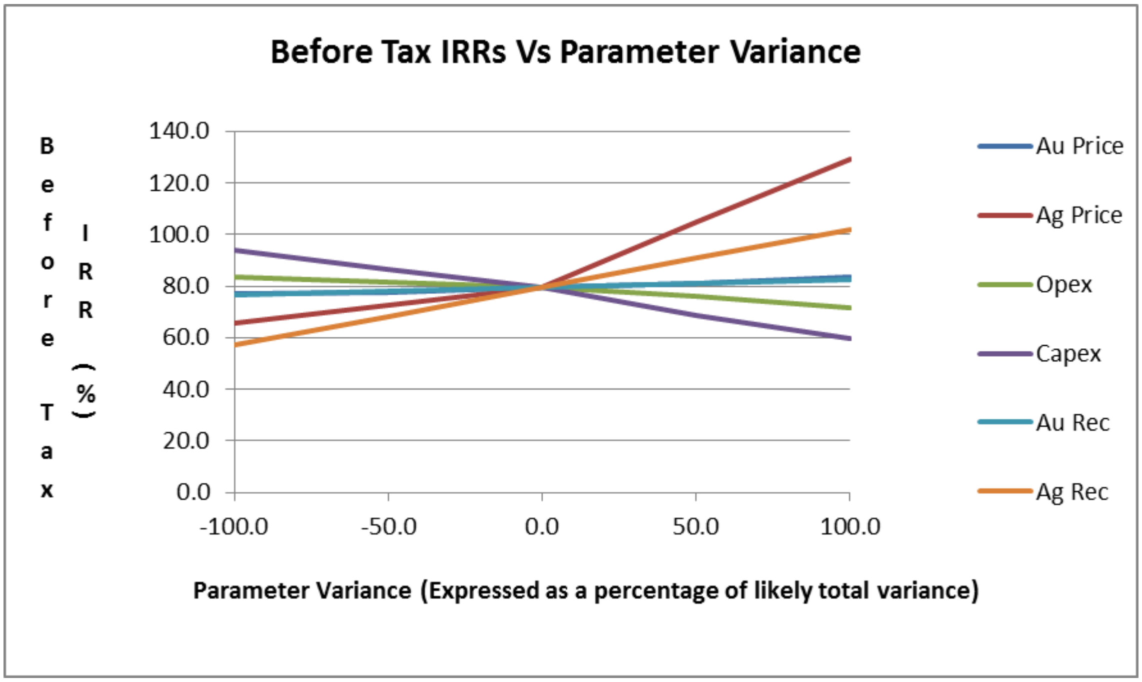
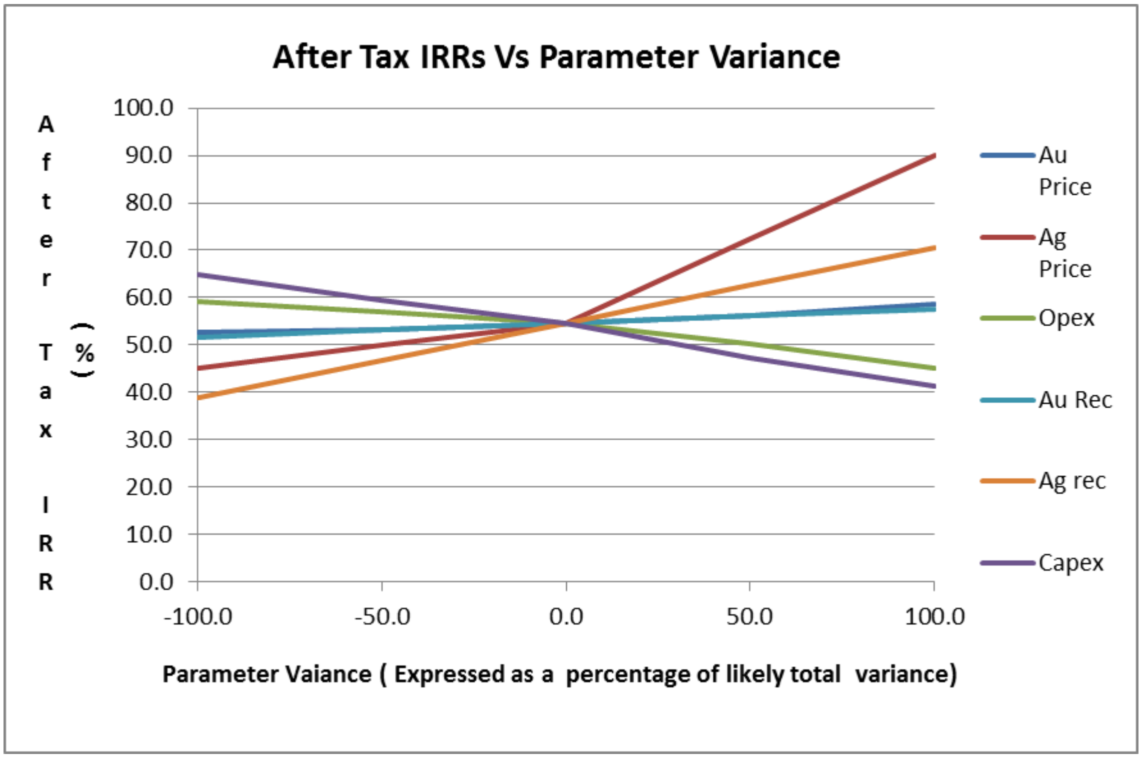


Figure 22.9-3: After Tax IRRs vs. Parameter Variance


After Tax IRRs Vs Parameter Variance
After Tax IRR (%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
-100.0
-50.0
0.0
50.0
100.0
Parameter Vaiance (Expressed as a percentage of likely total variance)
Au Price
Ag Price
Opex
Au Rec
Ag rec
Capex

23 ADJACENT PROPERTIES

There are no adjacent properties to consider in the context of this report. The mineral resources encompass the tailings from historic underground mining which are fully contained within the Project area and which is isolated from other documented tailings areas.

24 OTHER RELEVANT DATA AND INFORMATION

As part of the Project visit DRDAL's representative QP interacted informally with residents of the town of Parral and local government officials and noted enthusiastic local support for the Project and the prospect of more employment opportunities.

The author concludes that there is no other relevant data and information to include or consider at this time.

25 INTERPRETATIONS AND CONCLUSIONS

The PFS has concluded that the GoGold reserves can be easily treated by a conventional heap leach, stacking and agglomeration with Merrill-Crowe processing facility. Similar facilities are currently in operation throughout Mexico and South America. The plant design was based on the results of the extensive metallurgical test programme completed on actual GoGold tailings deposit samples, which showed the suitability of the Merrill-Crowe treatment plant. The tailings will be reclaimed and delivered to the plant from the tailings deposit located in the city of Parral using conventional mining practices and equipment suitable to this type of recovery.

The EIA carried out as part of the PFS has concluded that the Project can be developed in an environmentally responsible manner with significant economic benefits to the city and the local communities. A comprehensive environmental management system will be developed to facilitate and control the environmental and social aspects during the development and operation of the Project.

The economic model has concluded that the Project is marginally positive at a gold price of USD 1,475/oz. and silver price of USD 29/oz. The costing estimates for the study were prepared late in 2012 and based to a large extent on South African supply and installation rates. Experience and industry indicate that local Mexican rates are much lower than South African rates and thus the company plans to update the cost estimates early in 2013 (during a FEED / early works phase of the Project) with the aim of significantly improving the financial parameters.

The tailings deposit reserve is measured and it is not expected that the LoM would be extended.

The financial analyses are based on the scenario of 100%-equity financing for the project. The base case model assumes a constant price of gold price of USD 1,475/oz. and silver price of USD 29/oz. and generates a pre-tax IRR of 80%. The forecast capital payback time is within 2 years.

26 RECOMMENDATIONS

It is recommended that GoGold:

- Carry out a 3 month FEED and early works phase prior to construction
- Consider negotiating a fixed unit rate mining contract rather than an equipment rental time and materials contract to reduce risks with costs and productivities
- Revisit the HL pad design in order to optimise phased stacking methodology and reduce upfront earthworks capital cost requirement
- Revisit the capital cost estimates in general for possible savings due to optimising the cost estimates from ± 20% to ± 10%
- Further review the capability of local civil and steelwork contractors for possible savings
- Continue negotiations with the regional power authorities on fixing the supply load and power rates
- Consider the SART process as a complement to the Merrill-Crowe process. This cyanide recycling process may see a reduction in reagent consumption, translating to lower OPEX costs.

27 REFERENCES

[1] D. R. Duncan & Associates Ltd. "Parral Tailings Project, Chihuahua, Mexico, NI 43-101 Technical Report on Mineral Resources" dated 11 May 2012. Project no. 12-003.

[2] Kappes, Cassiday & Associates "Jales La Prieta Project – Report of Metallurgical Test Work prepared for Servicios y Proyectos Mineros de Mexico, SA de CV" dated October 2011. Project no. 513C.

[3] pH Consultores Ambientales "Climate of Mining Project *La Prieta*", dated 06 September 2012.

DATE AND SIGNATURE PAGE

The effective date of this report entitled "Prefeasibility Study NI 43-101 Technical Report" on the Parral Tailings Project, Chihuahua, Mexico, is 20 February 2013.

Signed on behalf of MDM Engineering International Ltd

"signed and sealed"

David S. Dodd, B.Sc (Hon)
Chief Metallurgist
20 February 2013

"signed and sealed"

David R. Duncan, P. Geo.
D. R. Duncan & Associates Ltd.
20 February 2013

"signed and sealed"

Ken Kuchling, P. Eng.
P&E Mining Consultants Inc.
20 February 2013