

RETHINKING MINING PROJECT VALUATION

THE RULES FOR ASSESSING VALUE
IN THE SCRUTINY GENERATION

Featuring – Red Eagle Mining (TSX:R)
Mining in Colombia



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"We present a mining project evaluation method that recognize district-specific catalysts as key in mining developments as an effort to reinforce traditional valuation methods and to better allow investors to assess the value of a project beyond a Net Present Value (NPV).

We are certain that only those teams that are able to identify and build on these district-specific assets should be considered for potential investment in the modern real-time conditions that have changed the rules that make a mining project able to succeed"

Introduction to district valuation

WORDS BY GABRIEL BAYONA

The crusade for the holy grail of mining investment is led by the guts of veteran investors and industry experts who assess the likelihood of a team to succeed based on previous achievements and the alignment of conditions that make a case promising. This intuition is (almost) always supported by some numbers that make an investment reasonable.

Traditional valuation methods in mining have, for good reasons, focused on assessing the geological, mining, engineering and financial aspects supporting a project, with variations in the method used depending on the stage of the project according to the mining cycle. In addition to Discounted Cash Flow (DCF) analysis, these models have increasingly included advanced mathematical and statistical tools to estimate NPVs, and whilst great when modelling technical merits, they are blind to feasibility factors sometimes as critical as the geological and mining criteria; two of the most relevant being social and environmental assets.

We call them assets, because they are so in the modern mining playgrounds, but they are also success catalysts and merit their own numerical assessment just like the geological and engineering factors. These assets have been regarded as collateral and sometimes even minor considerations that must merely be fine-tuned whilst delineating the resources. Nonetheless, failures experienced alike by majors and juniors because of miscalculations concerning these factors have represented increased losses for mining investors in recent years.

District-specific catalysts such as social and environmental factors can be quantified, to an extent, prior to making an entrance to a new location, and can be further enhanced by a proper and sustainable business mindset by corporate management.

We present a mining project evaluation method that recognizes district-specific catalysts as key in mining developments as an effort to reinforce traditional valuation methods and to better allow investors to assess the value of a project beyond a NPV. We are certain that only those teams that are able to identify and build on these district specific assets should be considered for potential investment in the modern real-time conditions that have changed the rules that make a mining project feasible.

The PES-CMG Project Evaluation System

a) Overview

Our primary goal is to provide integral district-specific valuations for mining projects that accurately reflects all factors involved in achieving feasibility.

Starting with traditional valuation methods and key concepts such as the mining project cycle, and using successful examples to calibrate the new variables, we are able to present a project evaluation system for gold projects.

The basis of the system is applicable to any district and commodity, as long as the requirements are well understood, which needs the input from a diverse set of professionals. Our first version takes on the experience in 10 key areas needed to develop a project in Colombia over the last decade.

In addition, this system allows us to track project developments, as they advance from early stage to production, focusing on specific weaknesses and efficiently comparing projects, by using standard parameters and qualifications.

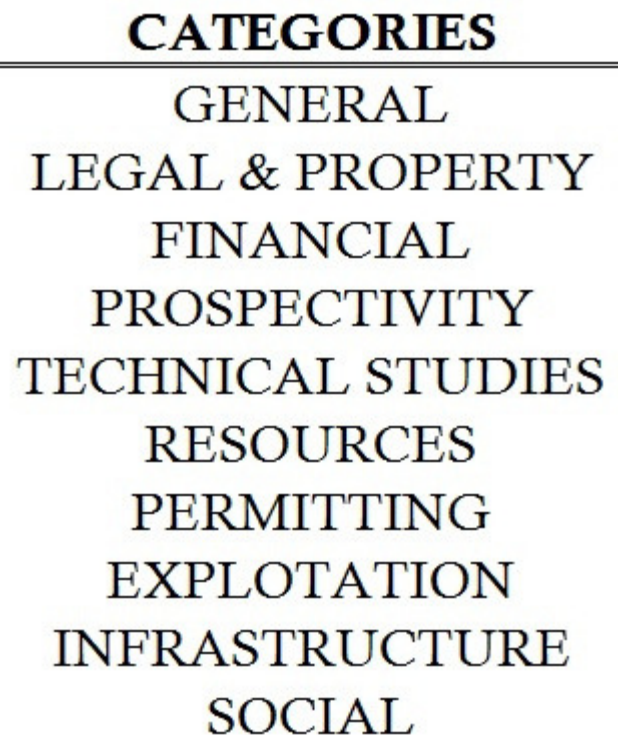


Figure 1. Categories considered in the Project Evaluation System

b) How does it work?

- 1) The process starts by obtaining project information in the categories illustrated in Figure 1, that cover the key elements for starting a new mining operation. This is done via a predesigned format.
- 2) The information obtained in step one is processed and results in a series of measures and calculations which are interpreted in terms of the value or risk they represent to the project.
- 3) The values and risks are quantified in a methodical process which includes the identification and application of bonuses and penalties for key features.
- 4) Ultimately each category obtains a rating and adds up to the economical valuation of the project. The analyzed features are considered in terms of the cost they represent or might represent and the value they are bringing to the project.
- 5) Finally, we include a highlighted space for flags or alerts which can be positive or negative and serve as a quick reference for notable aspects to consider.

We define three types of projects according to the stage of the mining cycle:

- 1) **Early Stage Projects**
- 2) **Projects with Resource Estimates**
- 3) **Projects in Production Stage**

According to the stage of a project, some categories are not applicable, as shown below:

STAGE	CATEGORY APPLIES?			
	PROSPECTIVITY	STUDIES	RESOURCES	EXPLOITATION
EARLY	YES	YES	NO	NO
RESOURCES	NO	YES	YES	NO
FEASIBILITY	NO	NO	NO	YES

Figure 2. Categories applicable according to the stage of the project

c) Mining Risk Rating

Colombia is a stereotypical district with high geological potential but countless challenges, many hard to quantify and be dealt with, which ultimately have kept both investors and prospectors from unlocking value.

Red Eagle Mining (TSX:R) is a Canadian gold mining company that have invested over a decade in Colombia, recently receiving environmental license to operate the Santa Rosa project. Many considered this a highly unlikely achievement in a country where evidence has demonstrated a high percentage of failure when trying to start new mines.

Besides being led by a technically proficient team, Red Eagle has been quickly to learn and adapt to the modern mining markets demands, correctly assessing the costs and steps needed to achieve its corporate goals.

To reflect the risk factor in our reports, we introduce a "mining risk rating" system that accounts for the likeability of things going wrong, or going well when following the development of a mining project and its implications in the overall value or the entrepreneurship, as well as potential implications that might make the project less, or more, viable.

RATING	DESCRIPTION
AA	The conditions in this area are outstanding and represent a competitive advantage for project development
A	The project has notable strenghts in this area outperforming average conditions
B	The current status in this area is average without significant positive or negative impacts
C	The weaknesses in this area significantly affect the valuation of the project and might led to project inviability
D	The project has major deficiencies in this area which compromises the viability of the project in the short term

Figure 3. Mining Risk Ratings description



The Santa Rosa Gold Project

Red Eagle's flagship project, Santa Rosa, takes on the lessons learned over a decade of interaction between modern mining and a promising but risky frontier district.

Whilst small in comparison to international production standards, size is a key metric for success, and one of Red Eagle's Santa Rosa primary merits lies on demonstrating that the puzzle of doing mining in Colombia can be solved using the correct business mindset.

We present below our analysis report and integral valuation for the project.



Ran Ramon Staff & Local Administration
Red Eagle Web Site

I) GENERAL

Santa Rosa Countryside from Red Eagle's HQ
OPHIR Archive

HIGHLIGHTS

Project Name		Santa Rosa	
Minerals		Precious Metals	
Location	Municipality	Santa Rosa de Osos	
	Department	Antioquia	
	Country	Colombia	
Insignia	<i>Colombia's Premier Emerging Gold Producer</i>		
Project Phase	Production	Current Phase	2016
Type of Operation	Underground	Started in Year	



SEGMENT VALUATION (\$US)

\$0 *



COMMENTS

Related to overall project characteristics

Red Eagle Mining focused at Santa Rosa due to the combination of qualities that made the project feasible. One of such conditions is being a high-grade underground project.

The nation's popular conception is that mining is an environmental sin that should be banned at all levels. This is in part attributable to the uncontrolled and illegal operations that wreak havoc country-wide.

Many of these non-technical operations profit at the expense of "intangible" environmental assets using over-sized surface mining equipment. Colombia has yet to see tangible improvements and benefits attributable to large scale modern mining, and starting by permitting a project with less environmental footprint, such as an underground operation, is a wise approach to introducing new options for local industry.

* General conditions of a project do not add value per se, but can be detrimental in many cases

II) LEGAL & PROPERTY

HIGHLIGHTS

Legal Representative	Red Eagle Mining		Since Year	2008
Type of Ownership	Public - Corporate			
	Major Shareholders	Shareholder Description	%	
a)	Orion Fund JV Ltd.	Mining Fund (Financing)	13%	
b)	Liberty Metals & Mining Hld. LLC	Mining Operations	20%	
c)	Stracon GyM S.A.	Mining Services (Operations)	15%	
Mining Concessions	10	Title Area (ha)	2,865	
Avg. Year Concession Granted	2009	Remaining Years	22	
Mining Applications	0	Applications Area (ha)	0	
Other Owners	11	Project Owner Global Participation in Mining Titles	51.1%	
a) Corporations	4			
b) Individuals	7			
Options				
a) Acquisition %	0%	Value (\$US)	\$0	
b) Cession %	0%	Value (\$US)	\$0	
c) Final Potential Position of Project Owner			51.1%	
Land Ownership	Agreement with Owner			
	Project Status	Observations		
a)	Starting Production	Nov - 2016		
b)				
c)				

B
RISK RATING


> Potential delays by other title owners participation
> In Production

SEGMENT VALUATION (\$US)

\$1'528,379

COMMENTS

Related to title ownership, shareholder participation, options, surface rights and project status

The project is backed by key industry firms that contribute as operators or financing groups and have significant participation to ensure aligned objectives. Red Eagle has ensured that it has a majority participation in each of the key mining titles and has proper agreements with all legal stakeholders.



Red Eagle's stand at Feria Minera in Medellin
Red Eagle Website

III) FINANCIAL

HIGHLIGHTS

Current Assets (US\$)		\$17,479,014
	Short-term Commitments	Value (US\$)
a)	Short-term Debt	\$15,339,881
b)		
c)		

A

RISK RATING

SEGMENT VALUATION (\$US)

\$0

> None

COMMENTS

Related to liquidity conditions

After completing two equity financings in 2016 for CAD\$ 20 million, and with a 200% share appreciation in the last 2 years, management has demonstrated ability to maneuver through the liquidity scarcity times relatively well, successfully funding the advancement of the Santa Rosa project including mine and plant construction, covering the majority of the commissioning costs in 2016.

The current conditions and production forecasts reduce financial risks in addition to the institutional support that back up the project in case of cost overruns or unexpected delays. The financial structure of the company makes it an interesting option for gold investors as dividends and interest payments are intended to be paid in metal.

IV) PROSPECTIVITY

Early days surface prospecting
Red Eagle Mining Website

HIGHLIGHTS

Small Scale Mining Activity				
a)	Underground	Yes	Aprox # of Workings	1,150
b)	Open Pit	Yes	# of Areas	40
			Montly Production (Au oz)	
			Working Grade (Au g/t)	30
Corporate Mining in the Area				
	Company	Resources (oz)	Grade (Au g/t)	Production (Au oz/Yr)
a)				
b)				
Geological knowledge of the area		High		
Type of Deposit		Mesothermal		



SEGMENT VALUATION (\$US)

N/A


> High grade local workings

COMMENTS

Related to district conditions and geological prospectivity

The Santa Rosa project targets high grade mineralized breccia intruding the Antioquia batholith. Artisanal workings including underground excavations as well as surface workings have been operated previously.

This section of analysis is not included in the valuation as the Santa Rosa project is in production stage.


V) TECHNICAL STUDIES

Geophysical Survey at Santa Rosa
Red Eagle Mining Website

HIGHLIGHTS

Economic Viability Study Level				Feasibility		
Mapping						
a)	Topographic	Yes	Scale	1:500		
b)	Geological	Yes		1:2000		
Geochemical Sampling						
a)	Soils	Yes	# Samples	440	Average Grade (g/t)	
b)	Streams	Yes		264		
c)	Rock	Yes				
d)	UG Vein	Yes				52.1
f)	Wall Rock	Yes				7.4
g)	Trenches	Yes				
Total				4,637		
Geophysics						
a)	Induced Polarization	Yes	Anomaly Size (ha)	345		
b)	Radar Penetration	No				
c)	Gravimetry/Magnetometry	Yes				
d)	Seismic	No				
e)	Well Geophysics	No				
Other Studies						
a)	Metallurgical	Yes	Recovery	96%		
b)	Geotechnical	Yes	Rock Quality	Good		
c)	Biodiversity	Yes	Ecosystem Impact	No		
d)	Soils	Yes				
e)	Mine Design	Yes				
f)	Plant Design	Yes				
g)	Tailings	Yes				
h)	PTO	Yes				
i)	PMA	Yes				
Drilling		Yes	mts. completed	45,609		
			mts. reported	1,000		
			Total Drill Holes	238		
Intercept Highlights						
	Length (m)	Depth (m)	Grade (g/t)			
a)	5.0	100	55.0			
b)	10.0	50	7.0			
c)	50.0	200	4.5			

N/A
RISK RATING


> High grade local workings

**SEGMENT
VALUATION (\$US)**

N/A

COMMENTS

Related to completed studies and results from exploration and drilling

From project evaluation to resource estimation and mine design the processes described are clear with a comprehensive set of data that describes Red Eagle's plan for the near future.

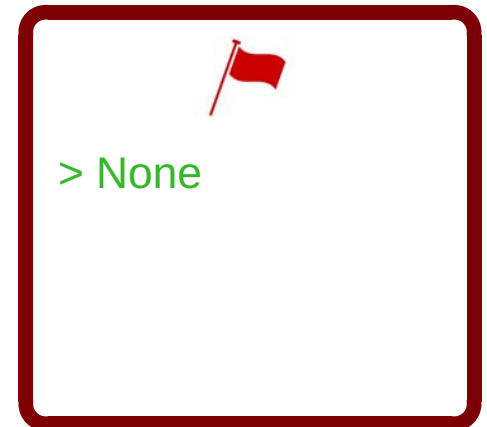
This section of analysis is not included in the valuation as the Santa Rosa project is already in production.

VI) RESOURCES

San Ramon Site Resources Model
Red Eagle Website

HIGHLIGHTS

Resource Estimation				
a) Study Standard	NI 43-101			
b)	Resources (Au oz)	Grade (g/t)		
Measured	93,000	4.27	15%	of total
Indicated	386,000	3.45	63%	
M&I	479,000	3.61	78%	
Inferred	133,000	2.71	22%	
Total	612,000	3.41		
c) Cut-off (g/t)	1.2			
d)	US\$ in drilling per ounce found			
	11.2			
Reserves				
a) Study Standard	NI 43-101			
b)	Reserves (Au oz)	Grade (g/t)		
Proven	82,000	5.95		
Probable	323,000	5.04		
P+P	405,000	5.22		
Resources to Reserves conversion				
a) Measured to Proven	88%			
b) Indicated to Probable	84%			
c) M&I to P+P	85%			



SEGMENT VALUATION (\$US)

N/A

COMMENTS

Related to exploration costs and quality of mining reserves and resources

The project reserves are currently delineated to 250 meters in depth with brownfield potential to the east and in depth. The mineralized zone consists of a 2 km strike line with an up to 20 meters wide shear zone. The concern for lack of continuity in batholith intrusions that might affect the resource modelling is addressed by a detailed ore production delineation drilling program that has to this date surpassed modeled grades and mining width. In addition to the current reserves, additional satellite targets (Rojo and Canada Rica) are currently in exploration with resources expected for Q12017.

VII) PERMITS

Mine Site Slope Management
OPHIR Archive

HIGHLIGHTS

Environmental Licence	Yes	Official Res. #
Water Usage		
a) Underground Prospecting		Yes
b) Surface Waters		Yes
c) Discharge		Yes
d) Stream Occupation		Yes
Atmospheric Emissions		Yes
Distance to Natural Park (km)		25
Distance to Forest Reserve (km)		6
Certification of Communities (MinInterior)		Yes
Distance to Paramo (km)		30
Distance to Critical Infrastructure (km)		14
Explosive Permits		Yes
Scientific Research authorization (CAR)		Yes
Archaeological Prospecting authorization (Icahn)		Yes



SEGMENT VALUATION (\$US)

\$932,283



COMMENTS

Related to permit status and environmental considerations

In an Intertropical Convergence Zone country as Colombia, environmental issues are countless and Red Eagle's processes have been remarkable, providing them a 99% accomplishment notice by Local Environmental Agency. These processes include an Ecopark, reduced impact through redesign, state of the art water management with no discharge to creeks, cyanide detox, soil recovery, grassing, hydro seeding and protection of SILAP protected areas with 900 ha in conservation. Aerial survey of the zone reveals high care in merging the operation with the environment,

VIII) EXPLOTATION

Underground Front Loaders
Red Eagle Corporate Presentation


HIGHLIGHTS

Economics		47	Technical			
a)	NPV (mll. \$US)	104	a)	Mining	Mech. Shrinkage Stoping	
b)	Discount Rate	5%	b)	Processing	SAG, Flot, CIL, EW	
c)	IRR	53%	c)	Tailings	60% re-used	
d)	Return (Years)	1.3				
Operation		48	Operational Costs			
				\$US/t	\$US/oz	
a)	Avg. Yr Production (oz)	48,000	a)	Mining	37	265
b)	Initial Production (oz)	68,000	b)	Processing	25	176
c)	Throughput (TPD)	1,000	c)	G&A	11	75
d)	Life of Mine (yrs)	8.0	d)	Royalties	11	80
e)	Operation Grade (g/t)	4.57	e)	Sustaining		74
f)	Metallurgy Recovery	96%	f)	Cash Cost		596
g)	Capex (mll. US\$)	74	g)	All-In Sust. Costs		670
h)	Sustaining (mll. US\$)	33				

A
RISK RATING

SEGMENT VALUATION (\$US)

\$160,598,173


> None

COMMENTS

Related to NPV analysis, investment yield and cash cost margin in relation to gold price

Production started in November 2016 and is expected to achieve commercial levels in Q1 2017. The construction phase was greatly benefited by a 57% Colombian peso devaluation during 2014-2015 period, contributing to completion on time and budget. The plant has a throughput capacity of 1,000 tpd and can be expanded to 2,000 tpd if needed with a US\$12 million investment. Operational economics are improved by reduced waste/ore ratios with up to 44% of the tailings reused in the stopes. Most impressive by Colombian standards is the use of a fully mechanized fleet and the field-tested 5 point system for development and support in line with high corporate safety standards.

IX) INFRASTRUCTURE

San Ramon Site Facilities
OPHIR Archive

HIGHLIGHTS

Distance to national airport (km)		88		
Acces to area via		Land		
Land Accessibility				
a)	Distance to national highway (km)	7.6		
b)	Road Category	2nd Order (Asph)		
Energy				
a)	Distance to electrical sub-station	7.6		
b)	Power (kW)	44		
Communications		Partial		
Distance to capital city (km)		77		
Distance to town center (km)		8		
Topography		Moderate		
Hydrography - Water Supply		Abundant		
Facilities & Equipment				
a)	Mining safety equipment	Yes	i) Camp	Yes
b)	Core storage	Yes	j) Furnace	Yes
c)	Plant with milling equipment	Yes	k) Heliport	No
d)	Laboratory	Yes	l) Mess Hall	Yes
e)	Wastewater Plant	Yes	m) Tailings dam	Yes
f)	Generadores de energía	Yes	n) Vehicle(s)	Yes
g)	Mining rescue warehouse	Yes	o) Workshop	Yes
h)	Ore processing plant	Yes	p) Parking Lot	Yes



SEGMENT VALUATION (\$US)

\$1,816,757

COMMENTS

Related to logistic strengths, access and general infrastructure conditions

Santa Rosa combines a set of logistic conditions that favors feasibility of the project, including easy land access from the mining capital city of Colombia, Medellin, a prudent distance from highly populated areas, being conveniently concealed in the midst of beautiful country landscapes, and provided with the basic utilities to operate.

X) SOCIAL

Students from Red Eagle's Gastronomy School
Red Eagle Website

HIGHLIGHTS

Public Order		Good	
Historical Mining		Yes	
Population Density		Low	
Social Programs		6	
a)	Forums per month	3	
b)	Education agreements	Yes	
c)	Technological support	Yes	
d)	Local industry support	Yes	
e)	Water investments	Yes	
f)	Road investments	Yes	
g)	Replanting campaigns	Yes	
h)	Local supplier purchases	Yes	
i)	Internet support	Yes	
j)	Sport support	Yes	
k)	Music support	Yes	
l)	Hospital investments	Yes	
m)	Sportfields investment	Yes	
n)	Cultural investments	Yes	
Population benefited by programs		2,200	
Presence of armed groups (last 5 years)		No	
Community mining acceptance		Yes	
Refugee re-location area?		No	
Guerrilla re-location area?		No	
Community flora/fauna sealed zone?		No	
Illegal mining in the area?		No	
Land Use			
a)	Project Direct Influence Area (ha)	540	
b)	Crops + Livestock area (ha)	221	41%
c)	Areas Not Intervened (ha)	119	22%
c)	Area selected for project infrastructure (ha)	60	11%
Illegal Crops		No	
Government Presence		Strong	
Population in Direct Influence Area		1,077	
Employment			
a)	Locals	233	% Local 40% % Population 22%
b)	Foreigners	349	



SEGMENT
VALUATION (\$US)

\$660,356

COMMENTS

Related to socioeconomics and employment conditions

This is an area where Red Eagle shines in comparison to local and international standards as there are no shortcuts taken by the team in approaching Santa Rosa's surrounding communities. A sincere (\$) commitment to the well-being and progress of the region is reflected in the sheer amount of well-thought programs and community improvements. Faithful to their slogan "Mining Well Done", this business approach might be a key element in achieving project sustainability, a return on the investment and open doors to access new districts in today's market conditions.

PROJECT VALUATION

SANTA ROSA PROJECT INTEGRAL VALUE (US\$)

\$165,535,766

99.2
PROJECT SCORE

CONCLUSION

This project score (Scale 0 - 100) represents a visual guidance of the sum of elements that make a project successful, under Colombian standards, considering all the processes, bonuses and penalties defined by the Project Evaluation System.

As of January 3, 2017, the market price of Red Eagle is 4.7% below our valuation for the Santa Rosa project. This remnant upside potential makes us conclude that the market has reasonably appraised the Company matching the current integral value of the Santa Rosa project.

Further value, not currently reflected in the stock price, can be derived from the inclusion of the Santa Ana and Vetás project in the valuation. These additional projects in Red Eagle portfolio share some of the winning criteria that apply to the Santa Rosa project as well as other strengths and weaknesses of their own and merit a dedicated analysis.

Red Eagle's achievements at Santa Rosa are the result of disciplined dedication and hard work ethics applied to a worthy vision that takes on the classic win-win saying and marks a route and point of reference for future endeavors in the local and global mining markets.

Colombian Mining Investment – Final Thoughts

RED EAGLE'S WINGS BRING A WIND OF CHANGE FOR COLOMBIA MINING

There is much to highlight when addressing what Red Eagle is doing in Santa Rosa, and probably it all comes down to the simplicity and a genuine win-win atmosphere that surrounds every process at Santa Rosa's operations site.

Amidst the storms coming with the Colombian post-conflict era, Red Eagle has built its house on the rock; not just because the advantageous geotechnical conditions of the Antioquia Batholith, but for a well-planned design that imbeds the Company in the social fabric of the region, giving it the opportunity to fulfill its long term expectations.

After years pressing through a dark tunnel listening to gloomy experts expressing how it is not possible to do mining in Colombia, looking at the development at San Ramon site can be a dazzling experience at first. It does not look like Colombia; and certainly, it is inspiring to see the same project management abilities and disciplined mindset that allowed the Canadians to build underground cities with just a few days of summer in a year, put into practice in Colombia where the sun is always bright. Their working pace is an example of what type of returns can be accomplished in the tropics.

Whilst their accomplishment might seem modest in the eyes of some industry experts in terms of size of the operations, many underestimate the real value behind the success of a modern mining company; realizing that the plant size and depth of the mine design is just the tip of the profitability iceberg.

Much before social and environmental anti-mining turmoil took the headlines in Colombia, Red Eagle established a corporate strategy that has surpassed the vision of the majors for the region. In key areas where others, big and small, have failed, Red Eagle has adapted. It comes down to not cutting corners, which many desperately seek under the pressure of showing short term profits, sacrificing the sources of mid-long term sustainable income.

ABOUT THE AUTHOR

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Mr. Bayona has worked as exploration geologist and investment analyst for local and global institutions over the last 10 years, evaluating hundreds of mining opportunities and closely following the development of the major mining projects in Colombia. Mr. Bayona has a passion for the development of the Colombian mining industry and the establishment of best practices that allow accessing the country untapped resources.

The author certifies that the ideas expressed in this report reflects his personal opinion about the company of concern. Also, the author certifies that he has not received any direct or indirect payment in exchange for expressing a specific view in this report.

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on the cover

Red Eagle's San Ramon
underground mine

OPHIR MRI Archive



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