

# Technical Report of the Marjan Gold-Silver Project, Armenia



**For Caldera Resources Inc.**

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### 3.0 Summary

The Marjan Gold-Silver Project was discovered in 1947 by Senior Geologist Y. Popik of the State Committee for Reserves of Armenia, Yerevan, Armenia. The project is divided in two sectors, the Central Sector, where most of the exploration work was completed, both by early Soviet exploration as well as the Global Gold Corporation, the most recent owner; and the Northern Sector, where only preliminary exploration by both parties has been completed. The exploration commenced in 1964 and continues today with a data verification program of the Company.

Caldera Resources Inc. has entered into a letter agreement with Global Gold Corporation to form a Joint Venture, whereby Caldera shall, subject to terms and conditions, earn a 55% interest in the Marjan Gold-Silver Project after completing a bankable feasibility study on the project or spending US\$3.0M on the property.

According to the work completed by Soviet-era geoscientists in the period prior to 2001, (the initial date of NI 43-101 compliance), the following mineral resources were established for a dry density of 2.84 g/cm<sup>3</sup>, a minimum thickness of 0.74 metres, and a cut-off of 1.8 g/t gold at Marjan.

**Table 1. Marjan Gold-Silver Project Mineralized Volumes**

<b>Marjan Central Zone</b>						
Category	Tonnage	Au g/t	Ag g/t	Cu %	Zn %	Pb %
C1	599,331	3.76	93.75	0.12	0.96	1.35
C2	4,173,425	2.48	92.51	0.16	1.02	1.24
P1	3,211,843	2.35	93.42	0.17	1.04	1.26
<b>Marjan Northern Zone</b>						
Category	Tonnage	Au g/t	Ag g/t	Cu %	Zn %	Pb %
P1	5,770,000	2.18	148.46	n/a	n/a	n/a

*\*These mineralized volume totals are historical in nature and are not compliant with NI 43-101. The data presented above was referenced from Poghosyan N. F. 1995 Marjan Gold – Silver – Polymetallic Property, State Committee for Reserves of Armenia, Sisian Geological Exploration Group, Yerevan, Armenia. (prior to 2001). The relevance and reliability of this estimate is the focus of current due diligence work in data verification with respect to the Armenian exploration database. The author, a Qualified Person, has not done sufficient work to classify the historical estimate as current mineral resources or mineral reserves; the Company is not treating the historical estimate as current mineral resources or mineral reserves as defined in NI 43-101; this estimate of a mineralized volume at the Marjan Gold-Silver Property should not be relied upon.*

The Marjan Gold-Silver Project is located in the Vedi ophiolitic suture zone, close to the border with the Hankavan-Meghri anticlinorium. The Vedi ophiolitic zone consists of Mesozoic siliceous-carbonate-volcanic strata intruded by serpentinite bodies, and overlain by Paleogene sediments, calc-alkaline volcanics, and tuffs. The Marjan Gold-Silver Project veins are dominantly located in contact with diorite porphyry dikes intruding Eocene andesites, and to a lesser extent, intruding quartz diorites to monzonite intrusives. Sediments occur in what



appear to be graben structures, purported to be related to the Mesozoic closure of ophiolitic suture zones.

Vein mineralogy includes pyrite, argentite, chalcopryrite, sphalerite, galena, tetrahedrite, with trace realgar, marcasite, and enargite. Gangue mineralogy includes quartz, barite, carbonates, and tourmaline; silicification is present as quartz/chalcedony with minor adularia and calcite. Advanced argillic, argillic, and propylitic alteration is also present. Veins dominantly strike north-south and dip steeply to the east or the west.

The deposit type applied to Marjan is that of the 'Creede'-type epithermal vein system, given similarities in ore- and gangue mineralogy, structural setting (veins), and initial observations relative to the structural setting.

The author recommends that a data verification program is put into place, with initial assaying of pulp samples by an independent Canadian laboratory; data evaluation and digitisation (if necessary), and selected random re-logging of at least 20% of total diamond drill cores with core quartering and assaying. Trenches should be reviewed and systematically re-sampled, with resurveying of drill collars integral to the data verification program. Adits should be visited (if deemed safe) with resampling of vein exposures designed to confirm the historical assay distribution, on both lithological and structural grounds.

A budget of C\$242,660 is proposed to accomplish this.

## 4.0 Introduction

At the request of Mr. Bill Mavridis, President and CEO from Caldera Resources Inc. (The Client), a report has been prepared by Ricardo Valls, M.Sc. P.Geo. of Valls Geoconsultant to present a summary of the technical aspects of the Marjan Gold-Silver Project in Armenia.

Caldera Resources Inc. has signed an agreement with Global Gold Corporation of Delaware, USA, such that the Company may acquire a 55% interest in the property known as the Marjan Gold-Silver Project, located near the village of Arevisa, Sisian Province, Republic of Armenia. The Company has paid US\$50,000 and has committed to pay an additional US\$100,000 by 31 March 2010 as well as issue 500,000 shares.

The author visited the project core shack and technical offices in Armenia as well as both Northern and Central Zones of the property in two separate occasions on December 3<sup>rd</sup>, 2009 and April 21<sup>st</sup>, 2010, with the most recent visit lasting one day in length, and this report is based on technical information presented by the Client as well as publicly available information.

Global Gold Corp., through its wholly owned Armenian subsidiary Global Gold Hankavan LLC, holds a twenty-five year special mining licence HA - L - 14/526 and License Agreement 411, for the Marjan Gold-Silver Project. The license was issued on April 22, 2008 and expires April 22, 2033.

The mining rights were transferred to Marjan Mining Company, LLC, on March 12, 2010, to facilitate the structure of the proposed JV (see appendix II).

All coordinates in this report correspond to the old Soviet Pulkovo 1942 GK Zone 8 datum and have been converted to equivalent coordinates in decimal and degrees. The author has adhered to the metric system and all costs are expressed in Canadian dollars.



## 5.0 Reliance on Other Experts

This report represents the professional opinion of Ricardo A. Valls, M.Sc. P. Geo. from Valls Geoconsultant. This document has been prepared based on a scope of work agreed with the Client and is subject to inherent limitations in light of the scope of work, the methodology, and procedures used. This document is meant to be read as a whole and portions thereof should not be read or relied upon unless in the context of the whole.

The author used data and information provided onsite by Dr, Henry H. Mkrtchyan and Sr. Geologist Khachik Eloyan from Global Gold Hankavan LLC, as well as information provided by the Client and other Canadian, Russian, and Armenian public technical sources. The author has relied on these sources and on technical reports provided by Global Gold Hankavan LLC, and believes that he has a reasonable basis for such reliance. The resource data presented was referenced from Poghosyan N. F. 1995 Marjan Gold – Silver – Polymetallic Property, State Committee for Reserves of Armenia, Sisian Geological Exploration Group, Yerevan, Armenia.

The author has seen legal documentation on the ownership and the land status of the project, but has not verified them. Finally, the reader should notice the signature date of this report, which is the cut-off date for the information that is included in the present technical report.



## 6.0 Project Description and Location

To acquire the Property, Global Gold Hankavan LLC requested of the Government of Armenia the coordinates of the area they wished to explore. The Government located these coordinates on a map and granted the ensuing area as the license to Global Gold Hankavan LLC. All permits have been acquired to conduct the work proposed for the property, and payments have been made to keep the property in good standing. The location of Marjan Gold-Silver Project, Armenia is shown in Fig. 1. Property vertices are shown in Table 2.



Figure 1. Location of the Marjan Project

The Marjan Project is composed of 1 licence covering an area of 18.5 Km<sup>2</sup> defined by the following coordinates:

Table 2. Coordinates of the Marjan Gold-Silver Project, Armenia WGS 84, UTM Zone 10S.

Point	X	Y	Elevation
1	532320.18	5073354.99	2720
2	533549.44	5075916.96	2560
3	531436.26	5079127.99	2090
4	529025.86	5080005.08	2170
5	528808.01	5076781.98	2480





As far as has been disclosed, there is no known environmental liability to the Client. The author has been told by representatives of Global Gold Hankavan LLC that there are no royalties, back-in rights, payments or other agreements and encumbrances to which the licence is subjected with the exception of legislated Armenian government royalties applied to production. At the time of writing, this royalty does not exceed 1.50%.

The Company entered into a letter of agreement on December 18, 2009, to form a joint venture with Global Gold Corporation (GGC) to form a joint venture to develop the Marjan gold-silver property. On 24 March 2010, the Company signed an agreement with Global Gold Mining LLC (GGM; a subsidiary of GGC) to form a joint venture, whereby the Company will hold a 55% interest in the property, and purchase up to 100% of the property subject to:

Expenditures up to US\$3MM toward the completion of a feasibility study within the meaning of NI 43-101 no later than December 31, 2010 to maintain the 55% interest, and to pay US\$50,000 upon signing (paid) and a further US\$100,000 upon closing of the transaction. Finally, the Company is required to issue 500,000 shares of the Company to GGM, subject to final TSX-V approval.

To earn the 100% interest, the Company shall make further payments totalling US\$2.85MM before 31 December 2012 (with extensions provided to 31 December 2014). A failure to pay the amounts when due will be subject to interest at a rate of 10% per annum.

Make payments totalling 10,000,000 AMD for the License on the property and 9,003,800 AMD for the Concession fee (approximately USD\$50,500).

## 7.0 Accessibility, Climate, Local Resources, Infrastructure, and Physiography

### 7.1 Accessibility and Climate

The Marjan Project is located some 260 km southeast of the capital Yerevan. Access is by paved highway to the town of Sisian, and thence some 28 km west to the village of Arevisa. From there, a six km gravel track leads to the project. Total travel time to the Marjan Project from Yerevan is approximately five hours, although the last section is frequently impassable in winter.

The Armenian climate is relatively continental, with dry, hot summers and cold and short winters. (Fig. 2). The summers are usually very hot with the temperature in August reaching up to 40 °C, while winters generally carry snowfall and freezing temperatures with January being often as cold as -15 °C. The amount of precipitation is small, amounting annually to about 350 mm.

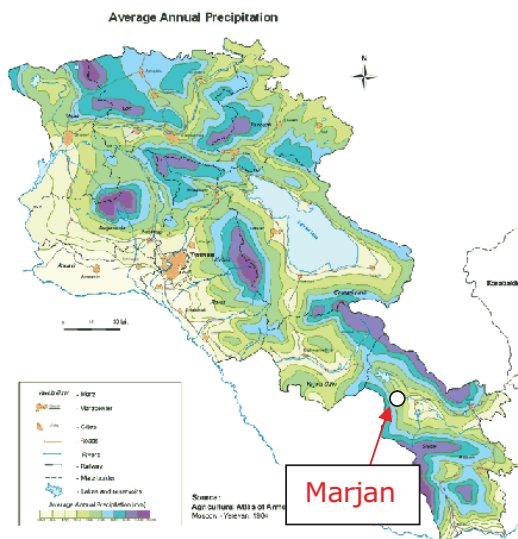


Figure 2. Climate of Armenia

Table 3. Average Weather Data

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Avg Temperature [°C]	-5.5	-3.5	4.5	12.5	17	22.5	25.5	25.5	20.5	14	5.5	0	11.5
Precipitation (cm)	2.3	2.5	2.8	4.8	5.3	2.3	1.5	0.8	1.3	2.3	3.1	2.8	31.8

**DISTRIBUTION OF DIFFERENT VEGETATION AND HABITAT TYPES IN ARMENIA**

The map shows the distribution of various vegetation and habitat types across Armenia. The legend is organized into several categories:

- Semi-desert and desert vegetation**
  - Semi-desert with *Artemisia* species
  - Desert with *Salsola* species
  - Desert with *Achillea* species
  - Cynophilous communities
- Steppe vegetation**
  - Grass-steppes
  - Newly formed vegetation on the Sevan lake shore
  - Meadow-steppes
- Phryganoid vegetation**
  - Phryganas, *Tragacanth* communities and semillars complex
- Open forest's vegetation**
  - Open forests with *Pistacia*, *Quercus araxina* species
- Alpine vegetation**
  - Subalpine meadows
  - Alpine meadows and carpets
- Hygro and hydrophyllous vegetation**
  - Marshes with *Carex* species
- Forests**
  - Forests with *Fagus orientalis* and *Carpinus* species
  - Open oak forests (*Quercus macranthera*)
  - Oak forests (*Quercus iberica*)
  - Oak and beech forests
  - Forest with *Betula*, *Acer* e.a species

The map also shows the borders of Georgia, Azerbaijan, and Turkey, as well as the NKR (Nagorno-Karabakh Republic). The location of Marjan is marked with a red dot in the southern part of Armenia, near the border with Azerbaijan and Georgia.

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## 7.2 *Physiography, Infrastructure and Local Resources*

The project is located six km west of the village of Arevisa, in Central Armenia. There are two hydroelectric stations in the area and the national electrical grid passes nearby. There are several rivers and three swamps, so both industrial and drinking water are abundant in the area. There is also the potential for a qualified technical workforce in the Sisian-Arevisa corridor.

Most of the area of the license (Figure 4) corresponds to elevations of 2100 to 2700 metres.



Figure 4. Marjan Gold-Silver Project topography



## 8.0 Work History

1947: The property was first sampled by Sr. Geologist Y. Popik, Armenian Geological Survey.

From 1947-1993: The license was explored by Zanchezurskaya Geologorazvedochnaya Ekspeditzia. Apart from local mapping at scale 1:50 000 with details at 1:10 000, this group also completed the following works:

1964: Two adits were driven on the gold and silver-bearing Central Sector.

1976 – 1978: A regional geochemical survey was undertaken, followed by electromagnetic and magnetic surveys.

1978 - 1993: Preliminary area exploration. Ten adits with a total length of 14 km were completed. As well, some 12,700 metres of drilling were completed in concert with 5,000 metres of surface work, including trenching and pitting. Seven samples, ranging from 120kg to 400 kg each were taken from the Central Sector for preliminary metallurgical studies. The Northern Sector had historical Soviet-era exploration totalling 1,200 metres of drilling and some 3,000 cubic metres of surface work.

1989: Resource estimations by the State Committee for Reserves of Armenia, Sisian Geological Exploration Group, Yerevan, indicated the existence of 4.13 MM tonnes at 2.48 g/t gold and 92.51 g/t Ag in the C2 category and 0.6 MM tonnes of 3.76 g/t gold and 93.8 g/t silver in the C1 category; both in the Central Sector. P1 resources in the Central Sector totalled 3.2MM tonnes of 2.4 g/t gold and 93.4 g/t silver. **The qualified person has not done sufficient work to classify the historical estimate as current mineral resources or mineral reserves. The issuer is not treating the historical estimate as current mineral resources or mineral reserves as defined in sections 1.2 and 1.3 of this Instrument. Therefore the historical estimate should not be relied upon.**

1991 – 1993: Global Gold Hankavan LLC acquired the property and explored the Northern sector with six drill holes and extensive trenching, plus surface mapping. A subsidiary P1 resource was calculated by State Committee for Reserves of Armenia, Sisian Geological Exploration Group, Yerevan, totalling 5.77 MM tonnes of 2.18 g/t gold and 148.46 g/t silver. **The qualified person has not done sufficient work to classify the historical estimate as current mineral resources or mineral reserves. The issuer is not treating the historical estimate as current mineral resources or mineral reserves as defined in sections 1.2 and 1.3 of this Instrument. Therefore the historical estimate should not be relied upon.**

A comprehensive report on the Marjan project was published by the State Committee for Reserves of Armenia, Sisian Geological Exploration Group, Yerevan in 1995 that summarised all previous exploration works and studies, including results modeling in three dimensions as well as extensive mineralogical testing (See Mineralization for details).

During the last three years, Global Gold Hankavan LLC has completed a total of 5,000 metres of diamond drilling at the Marjan Project.

## 9.0 Geological Setting

### 9.1 Regional Geology

Structurally, the Project is located in the Vedi ophiolitic zone and consists of Mesozoic siliceous-carbonate-volcanic strata intruded by serpentinite bodies, and overlain by Palaeogene sediments, calc-alkaline volcanics, and tuffs (Fig. 5). Regional lithologies are dominated by Miocene and Palaeocene volcanic units, chiefly represented by porphyritic andesitic rocks with monzonitic and quartzodioritic intrusives.

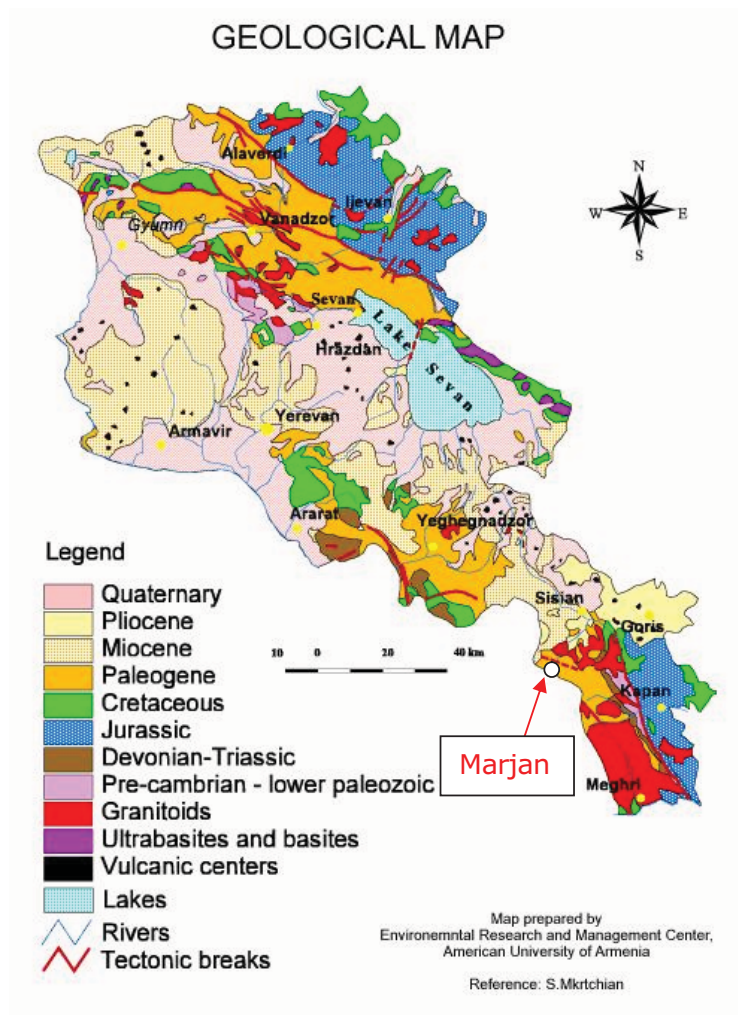


Figure 5. Regional Geology of Armenia.





## **9.2      *Local Geology***

In the Northern Sector a total of 25 veins have been mapped (Fig. 6). Veins strike north-south, and dip 75 to 80 degrees to the southwest. The majority of the veins are located in contact with diorite porphyry dikes intruding mid Eocene andesitic rocks, with some located within a quartzdiorite to monzonite intrusive located to the east end of the sector. Andesites are locally covered by Upper Eocene-Oligocene andesitic tuffs. Twelve vein targets lie to the west of the Northern Sector in an andesite porphyry. Seven vein structures occur within mapped quartzites in the northern and northeastern parts of the Northern Sector, while an additional four vein targets sit in a mapped tuff breccia unit on the southeastern section of the Northern Sector. On the southern margin of the Northern Sector, a conglomeratic tuff appears to lie unconformably against the volcanic. This unit appears variably mineralized with pyrite.



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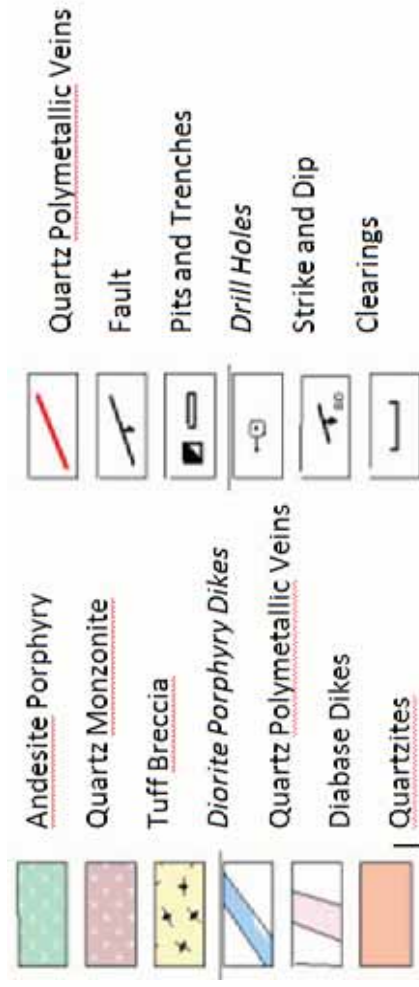


Figure 7: Expanded Legend for Figure 6.

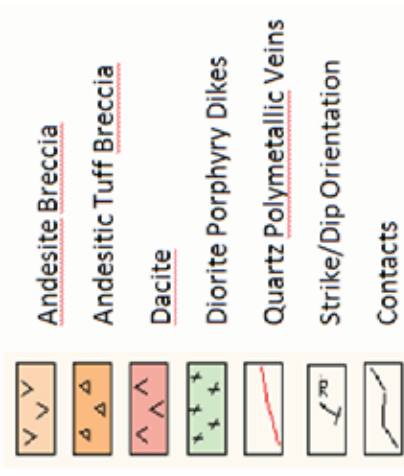
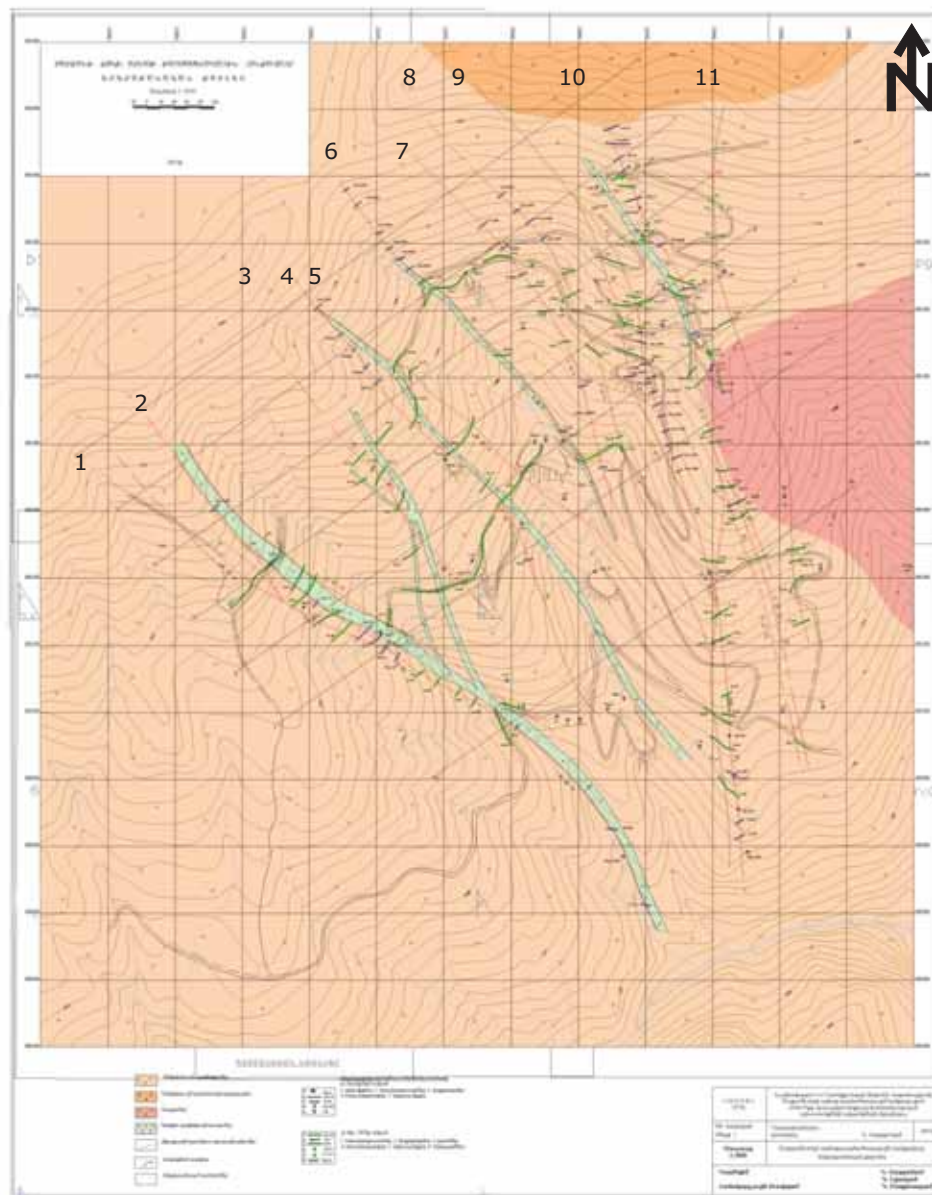


Figure 8: Expanded Legend for Figure 9

The Central Sector is located higher in relief, ranging from 2150 to 2700 metres. Eleven (11) veins have been identified, striking NS to NW-SE, and dipping for the most part to the southwest at 70 to 75 degrees. All veins are located in contact with diorite porphyry dikes intruding mid Eocene andesitic rocks, locally covered by 10 – 15 metres of Upper Eocene-Oligocene andesitic tuffs.



**Figure 9. Geology of the Central Sector of the Marjan Gold-Silver Project\***

\* 11 identified Veins numbered 1-11



The general dip of the mineralized structures at Marjan varies between 70° and 80°. At the Central Sector the angles are 70° to 75°, while at the Northern Sector the angles are more steep, varying between 75° and 80°. During the Soviet era, all the holes were drilled at 75° angles. Global Gold drilled at 40° and 60° angles. The estimated true thickness of the veins also varies between sectors. On the Central Sector, true thickness was estimated at 1.2 metres, while at the Northern Sector it reaches 3 metres in general.

## 10.0 Deposit Type

According to the USGS, the Marjan Gold-Silver Project has many of the hallmarks of a Creede-type Epithermal Vein System (Model 25b, Fig. 8).

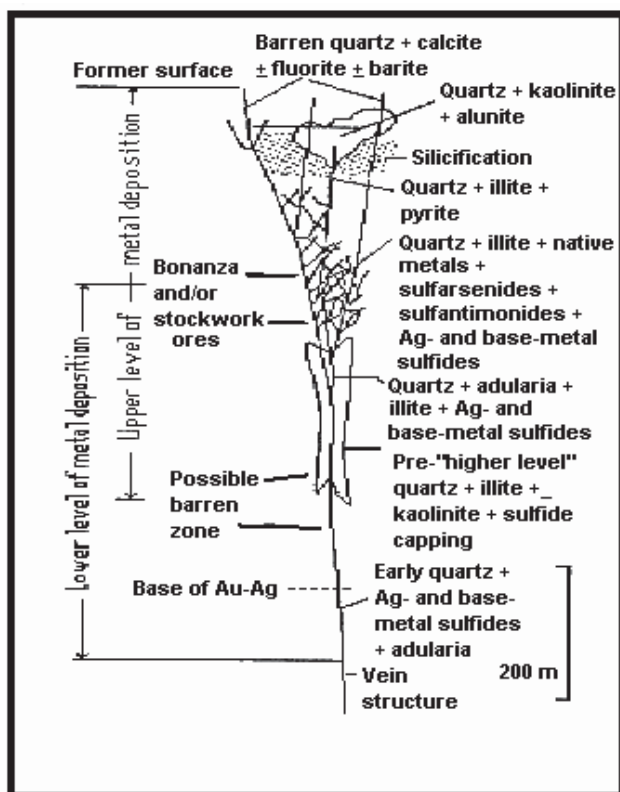


Figure 10 Diagrammatic Cross Section of Creede-Type Epithermal Vein Deposits

### 10.1 Description

Galena, sphalerite, chalcopryrite, sulfosalts, + tellurides + gold in quartz-carbonate veins hosted by felsic to intermediate volcanics. Older miogeosynclinal evaporites or rocks with trapped seawater are associated with these deposits.

### 10.2 Geological Environment

#### 10.2.1 Rock Types

Host rocks are andesite, dacite, quartz latite, rhyodacite, rhyolite, and associated sedimentary rocks. Mineralization related to calc-alkaline or bimodal volcanism.





### **10.2.2 Textures**

Porphyritic.

### **10.2.3 Age Range**

Mainly Tertiary (most are 29-4 m.y.).

### **10.2.4 Depositional Environment**

Bimodal and calc-alkaline volcanism. Deposits related to sources of saline fluids in prevolcanic basement such as evaporites or rocks with entrapped seawater.

### **10.2.5 Tectonic Setting(s)**

Through-going fractures systems; major normal faults, fractures related to doming, ring fracture zones, joints associated with calderas. Underlying or nearby older rocks of continental shelf with evaporite basins, or island arcs that are rapidly uplifted.

### **10.2.6 Associated Deposit Types**

Placer gold, epithermal quartz alunite Au, polymetallic replacement.

## ***10.3 Deposit Description***

### **10.3.1 Mineralogy**

Galena + sphalerite + chalcopryrite + copper sulfosalts + silver sulfosalts ± gold ± tellurides ± bornite ± arsenopyrite. Gangue minerals are quartz + chlorite ± calcite + pyrite + rhodochrosite + barite ± fluorite ± siderite ± ankerite ± sericite ± adularia ± kaolinite. Specularite and alunite may be present.

### **10.3.2 Texture/Structure**

Banded veins, open space filling, lamellar quartz, stockworks, colloform textures.

### **10.3.3 Alteration**

Top to bottom: quartz ± kaolinite + montmorillonite ± zeolites ± barite ± calcite; quartz + illite; quartz + adularia ± illite; quartz + chlorite; presence of adularia is variable.



#### **10.3.4 Ore Controls**

Through-going or anastomosing fracture systems. High-grade shoots where vein changes strike or dip and at intersections of veins. Hanging-wall fractures are particularly favourable.

#### **10.3.5 Weathering**

Bleached country rock, goethite, jarosite, alunite- supergene processes often important factor in increasing grade of deposit.

#### **10.3.6 Geochemical Signature**

Higher in system Au + As + Sb + Hg; Au + Ag + Pb + Zn + Cu; Ag + Pb + Zn, Cu + Pb + Zn. Base metals generally higher grade in deposits with silver. W + Bi may be present.

## 11.0 Mineralization

Due diligence data suggests that there are a total of 25 mineralized zones on the Northern Sector and 11 on the Central Sector that have been discovered to date by the exploration work conducted on the license. In general, these mineralized zones are represented by quartz veins, sometimes associated with dykes. Lengths may exceed 1.5 km, with average thickness of 1.2 metres. Most of the veins appear to have been followed to a depth of 200 metres\*. Vein structures remain open to exploration down dip below this level. (\*subject to confirmation of due diligence data).

There are two main types of mineralization. Quartz-barite mineralization is observed only in the Central Sector and a Quartz-Sulphide one is observed in both sectors (Fig. 11).



**Figure 11. Quartz-Sulphide Mineralization (left) and Quartz-Barite Mineralization(right) from the Central Sector at Marjan.**

Gange minerals are represented by quartz, barite, carbonates, and tourmaline. Silicification is extensive in ores as multiple generations of quartz and chalcedony are commonly accompanied by adularia and calcite. Pervasive silicification in vein envelopes is flanked by sericite-illite-kaolinite assemblages. Intermediate argillic alteration [kaolinite-illite-montmorillonite (smectite)] may be formed adjacent to some veins; advanced argillic alteration (kaolinite-alunite) may form along the tops of mineralized zones. Propylitic alteration dominates at depth and peripherally.

Figure 10 illustrates the genetic sequencing of the Marjan mineral sequence according to thin section petrographic analysis. According to these studies, the first mineralizing sequence was pyrrhotite in a brecciated texture. The bulk of the major ore minerals and gangue minerals were emplaced in episodes two and three, to wit, quartz, pyrite, pyrrhotite (continued), sphalerite, galena, and chalcopryrite.

The fourth mineralizing episode introduced sylvanite, bornite, boulangerite, and seligmanite. Ancillary mineralizing episodes brought zincite, arsenic-zincite, barite, realgar, marcasite, and enargite to the mineral suite, albeit in increasingly smaller amounts.

Stages Minerals	I-Polymetallic / Productive Tectonic Stage							II-Realgar- orpiment stage	
	Mineral phases								
	I	II	III	IV	V	VI	VII		I
Quartz									
Pyrite									
Pyrrhotite									
Sphalerite									
Galena									
Chalcopyrite									
Grey copper ore									
Sylvanite									
Bornite									
Geocronite									
Boulangerite									
Dufrenoyite									
Sb-dufrenoyite									
Seligmannite									
Twinnite									
Calcite									
Zinkenite									
As-zinkenite									
Antimonite									
Barite									
Realgar									
Orpiment									
Marcasite									
Enargite									
Fracture									
Structure	Equigranular	Detritus	Non-isometric	Replacement	Idiomorphic granular	Radiate-Fibrous	Lamellar	Non-isometric	
Texture	Brecciated	Brecciated	Veinlets disseminated	Veinlets	Incrustated	Veinlets	Radiated	Veinlets	
Average values of temperature of homogenization		275°C	242°C		186°C		<70°C		
		> 30%			> 10%			> 2 %	
		> 20%			> 5%			> 1%	

Figure 12. Marjan Gold-Silver Project Ore Mineralogy showing the sequence of formation of minerals.

## 12.0 Exploration

There has been no exploration by the Company on the Marjan gold-silver project as at the date of this Technical Report.

## 13.0 Drilling

There has been no drilling on the Marjan gold-silver project by the Company as at the date of this report.



Figure 13. Sr. Geologist K. Eloyan at Global Gold Hankavan LLC Core Shack



## **14.0 Sampling Method and Approach**

Historically, recoveries from the drilling program conducted by Global Gold Hankavan LLC were above 92% (K. Eloyan, pers. comm.). Samples were processed at the core shack with half of the core in organized storage trays , as well as three sets of pulps and rejects..

During the Soviet era, only the quartz veins were assayed. Samples were taken within individual lithologies at intervals varying from 0.2m to 1.5m. Global Gold Hankavan LLC established a 1.2 metre interval sample, within the limits of individual lithologies. This is the basis for the data verification program of the Company.

### ***14.1 Sample Bias and Sample Contamination***

**Not applicable, as the Company has yet to start a sampling program.**



## 15.0 Sample Preparation, Analyses, and Security

During the Soviet era, all samples were analyzed by the Central Laboratory of the Geological Directorship. Global Gold Hankavan LLC set up a wholly-owned sample preparation facility and laboratory (Fig. 14). The personnel that work at this lab facility are independent from Global Gold Hankavan LLC. Samples are prepared at the core shack using normal industrial equipment. Assays are performed using Atomic Absorption Spectroscopy, in which a sample is 'ashed' (vaporized) to an atomic gas. Light of specific frequencies shine through the gas to a detector. Fire Assay is also used, where samples are melted to an alloy; the alloys are separated and weighed.

Initial observations of due diligence studies with respect to Quality Assurance/Quality Control are as follows:



**Figure 14. Assay Equipment at Global Gold Hankavan LLC Core Shack**

Five percent of the total sample volume is subject to external assay control. A total of 370 samples were also analyzed at an external metallurgical laboratory in Yerevan. Duplicates were inserted into the sample feed every 100 samples with systematic use of blanks and standards as well. The author regards the Global Gold Hankavan LLC QA/QC procedure would likely withstand regulatory scrutiny, and that it was correctly applied.

The instrumentation of these procedures allowed the local lab to postulate that the normal atomic absorption analytical method was not accurately defining the grade characteristics of the project. As a result, lab staff subjects all samples to gravimetric determinations of gold and silver. However, the author has not seen the gravimetric precipitation process in use and cannot comment on whether the procedure used would elicit the expected results.

## 16.0 Data Verification

The author coordinated the re-sampling of several samples from two diamond drill holes from the Marjan Central Sector. The original samples were originally assayed at Global Gold Hankavan LLC field lab by Fire Assay with Atomic Absorption Spectroscopy finishing with repeats done at Activation Laboratories in Canada using Induced Neutron Activation Analysis(INAA).. INAA allows determination of assays via atomic focus, rather than the chemical methods of other analytical methods; neutrons are used as a high-energy activation source.

Samples close to the limit of detection of the used method were not included in the comparison. Statistical outliers were substituted by the mean of the sample. A total of 22 samples were included in the analysis.

Both the Student and Fisher test of mean and standard deviation comparison indicate that the two data populations are within the limits of analogy. A graphical correlation analysis based on the amounts of samples plotted on each quadrant of the scatter diagram shows a correlation of  $r = 0.51$ . All analyses are shown in Figure 15. The author considers that the data set has been validated, but also recommends that further tests be conducted, using similar assay methods and with a larger sample size.

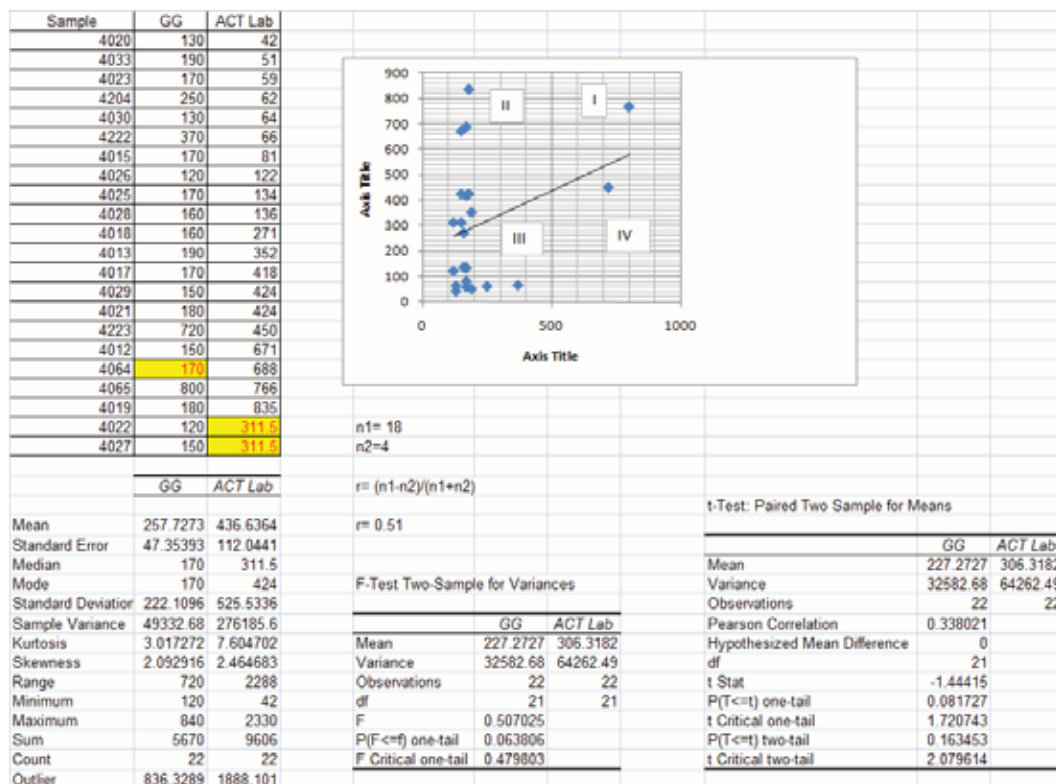


Figure 15. Validation of the data from Marjan.

## 17.0 Adjacent Properties

There are no properties adjacent or subjacent to the Marjan gold-silver deposit that are in active exploration.

As shown in Fig. 16, there are other copper and polymetallic deposits in the area.



Figure 16. Main mineral districts in Armenia.

The QP has visited some of these deposits in the area, but has not been able to verify all of them. **The presence of these deposits in the vicinity of the Marjan project is not necessarily indicative of the mineralization on the property that is the subject of this technical report.**

## 18.0 Mineral Processing and Metallurgical Testing

No mineral processing nor metallurgical testing has been performed on the Marjan gold-silver project.



## 19.0 Mineral Resources and Mineral Reserves Estimates

There are no NI 43-101 compliant mineral resources and/or mineral reserves on the Marjan gold-silver project.

Resource estimations were done by the State Committee for Reserves of Armenia, Sisian Geological Exploration Group, Yerevan, using the Block Method. A series of seven C1 blocks were defined (Appendix 2) for approximately 0.6MM tonnes of 3.76 g/t gold and 93.75 g/t silver with 4.173 MM tonnes of C2 blocks at 2.48 g/t gold and 92.51 g/t silver.. Blocks of all categories are defined using a dry density of 2.87 g/cm<sup>3</sup>, a minimum thickness of 0.4 metres, and a cut-off of 1.2 g/t of Au

Table 4. Resources at Marjan Project.

<b>Marjan Central Zone</b>						
Category	Tonnage	Au g/t	Ag g/t	Cu %	Zn %	Pb %
C1	599,331	3.76	93.75	0.12	0.96	1.35
C2	4,173,425	2.48	92.51	0.16	1.02	1.24
P1	3,211,843	2.35	93.42	0.17	1.04	1.26
<b>Marjan Northern Zone</b>						
Category	Tonnage	Au g/t	Ag g/t	Cu %	Zn %	Pb %
P1	5,770,000	2.18	148.46	n/a	n/a	n/a

*These mineralized volume totals are historical in nature and are not compliant with NI 43-101. Mineralized volumes were formulated by the Russian State Committee for Reserves of Armenia, Sisian Geological Exploration Group, Yerevan (prior to 2001). The relevance and reliability of this estimate is the focus of current due diligence work in data verification with respect to the Armenian exploration database. The author, a Qualified Person, has not done sufficient work to classify the historical estimate as current mineral resources or mineral reserves; the Company is not treating the historical estimate as current mineral resources or mineral reserves as defined in NI 43-101; this estimate of a mineralized volume at the Marjan Gold-Silver Property should not be relied upon.*



## 20.0 Other Relevant Data and Information

The Company has recently received further detailed information in the form of a 255-page document outlining the processes, results, and interpretations of all works performed on the Marjan Gold-Silver Property dating to 1995. The was published by Poghosyan N. F. 1995 Marjan Gold – Silver – Polymetallic Property, State Committee for Reserves of Armenia, Sisian Geological Exploration Group, Yerevan, Armenia.

The document is written entirely in Russian, and while Company technical staff have the ability to speak, read, and write Russian, the document is being translated to English for the benefit of management and shareholders. More interpretive insights bearing on the geology or Russian resource calculations may become available as the report is analyzed in detail.



## 21.0 Interpretation and Conclusions

Initial analysis of historical documents suggests that the Marjan Gold-Silver Project consists of two separate areas- the central and the Northern Sectors, of which the Central Sector has been explored in more detail. The geological model is one of steeply dipping veins associated in some cases with, and located proximal to, later quartz diorite intrusive dikes. Veins appear to vary in width both horizontally and down dip, and appear to contain anomalous and significant amounts of gold, silver, copper, lead, and zinc. Other elements may be present, but further research is needed.

The density of the sampling grid was adequate to the level of resources estimated and the combination of geological, geophysical, geochemical and mining works was sufficient to advance the degree of knowledge on both Sectors. The QA&QC procedures in place are adequate to confirm the data reliability. The author believes that the completed project met its original objectives.

The author concludes that the work completed to date first by the Soviet geologists clearly show that there is a clear potential at Marjan to develop a gold-silver mine with significant credits for other base metals sustain further exploration.





## 22.0 Recommendations

The author recommends that a more complete data verification program is put into place, with initial assaying of pulp samples by an independent Canadian laboratory; data evaluation and digitisation (if necessary), and selected random re-logging of 20% of total diamond drill cores with core quartering and assaying.

Trenches should be reviewed and systematically re-sampled, with resurveying of drill collars integral to the data verification program. Adits should be visited (if deemed safe) with resampling of vein exposures designed to confirm the historical assay distribution, on both lithological and structural grounds.

The author proposes a budget of C\$242,660 to accomplish this program, as per Table 5

Table 5: Proposed Budget

### Data Analysis - Yerevan and Marjan Site Sampling

General Labour	6 men at C\$50/day general labour for 12 days	\$ 3,600
QP Geoscientist	Program structure and overseeing in context of QA/QC protocols - 15 days at C\$1000/day	\$ 15,000
Non-QP Geoscientists	To oversee works in context of training in QA/QC protocols - 2 persons for 15 days at C\$400/day	\$ 12,000
Samples	Budget 3000 samples of 2kg each, including standards, blanks, and duplicates. Assay 38-element ICP with fire assay gold and silver.	
	Assaying - C\$38/sample	\$ 114,000
	Shipping - C\$6/kg Yerevan to Toronto; DHL Cargo; 6,000 kg to be shipped	\$ 36,000
Helicopter	Yerevan to Marjan return; one day at C\$8,000/day	\$ 8,000
Vehicle Rental	2 Vehicles, 15 days, C\$100/day all-in	\$ 3,000
Accommodations	C\$250/day, 15 days, 4 persons	\$ 14,000
Administration	Translation and Support	\$ 15,000
Subtotal		\$ 220,600
Contingency 10%		\$ 22,060
Total		\$ 242,660

As part of the compilation of previous existing material, the author recommends the use of \$8,000 USD for the translation into English of the most important Soviet reports.



## 23.0 References

<http://maps.unomaha.edu/Peterson/funda/MapLinks/Armenia/Armenia.htm>

<http://www.armeniapedia.org/index.php?title=Yerevan#Climate>

<http://pubs.usgs.gov/bul/b1693/html/bullfrms.htm>

**Poghosyan N. F.** 1995 Marjan Gold – Silver – Polymetallic Property, State Committee for Reserves of Armenia, Sisian Geological Exploration Group, Yerevan, Armenia.

State Committee for Reserves of Armenia, Sisian Geological Exploration Group, 1991. Resource estimations of the Mazmazak Gold-Polymetallic deposit. Yerevan, Armenia.

<http://www.machinerylubrication.com/Read/542/elemental-analysis-nuclear>



## 24.0 Date and Signature Page

**To Accompany the Report titled  
“Technical Report of the Marjan Gold-Silver Project, Armenia”  
for Caldera Resources Inc.  
May 15<sup>th</sup>, 2010**

I, Ricardo A. Valls, P. Geo, do hereby certify that:

1. I am currently employed as a consultant by:

Valls Geoconsultant.  
1008-299 Glenlake Ave,  
Toronto, Ontario, Canada  
M6P 4A6

2. I am a Professional Geologist in the Provinces of Quebec and Ontario, member of the Ordre des Géologues du Québec under the category of Geologist (416), as well as a member of the Association of Professional Geoscientists of Ontario (0160), the Geological Association of Canada (A6129), the Mineralogical Association of Canada, the Association of Exploration Geochemistry, the International Association of Applied Geochemistry, the Prospectors and Developers Association of Canada, the Canadian Institute of Mining, Metallurgy, and Petroleum, the Prospectors and Developers Association of Canada, the Society of Economic Geologists, and the Asociación de Ingenieros de Minas, Metalurgistas y Geólogos de México.

3. I am a graduate of the Moscow Institute of Mineral Prospecting in Moscow, Russia, as a Mining Engineer and Geologist in 1983, and in the same year I obtained the degree of M.Sc. in Economic Geology from the same Institute.

4. I have practiced my profession as a geologist continuously for 26 years. As a professional geologist with twenty-six years in the mining industry, I have extensive geological, geochemical, and mining experience, managerial skills, and a solid background in research techniques, and training of technical personnel. I have been involved in various projects world-wide (Canada, Africa, Russia, Indonesia, the Caribbean and Central and South America). Projects included from regional reconnaissance to local mapping, diamond drilling and RC-drilling programs, open pit and underground mapping and sampling, geochemical sampling and interpretation, and several exploration techniques pertaining to the search for gold and other precious metals, diamonds, PGM, nickel, base metals, industrial minerals, oil & gas, and other magmatic, hydrothermal, porphyritic, VMS and SEDEX ore deposits.

5. I have read the definition of “Qualified Person” in National Instrument 43-101 and certify that by reason of my education, professional association affiliation, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of NI 43-101, and the technical report has been prepared in compliance with the instrument.



6. I am responsible for the preparation of the technical report titled A Technical Summary of the Marjan Project, Armenia, dated May 15<sup>th</sup>, 2010. I am familiar with the Marjan Gold-Silver Project after having visited project offices on December 3<sup>rd</sup>, 2009 and the project site on April 21<sup>st</sup>, 2010, in addition to further study evaluating check samples and geoscientific observations.

7. I have no interest of any kind in the Marjan Gold-Silver Project, nor the issuer company that owns the properties. I am independent of the issuer applying all tests in Section 1.4 of NI 43-101.

8. I am not aware of any material fact or material change in the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which could potentially make the Technical Report misleading.

9. In the disclosure of information relating to permitting, legal, title and related issues I have relied, and believe that I have a reasonable basis to rely, on information provided by the Client.

Dated this 15<sup>th</sup> Day of May, 2010.

A handwritten signature in black ink, appearing to read "Ricardo A. Valls", is written over a horizontal line.

(s) Ricardo A. Valls

Name of Qualified Person

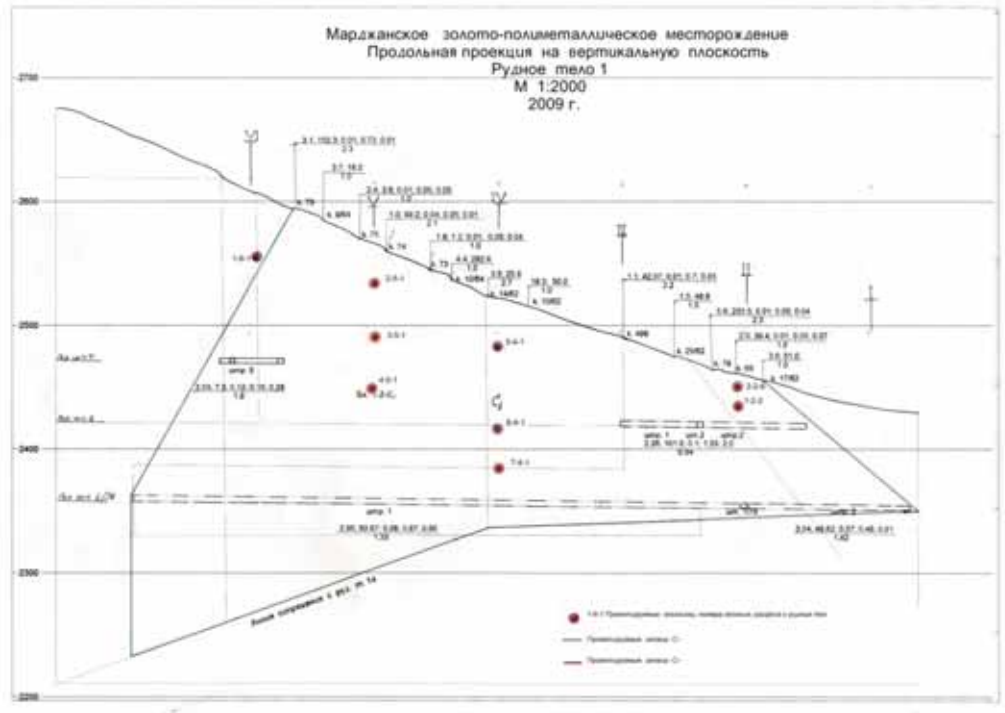




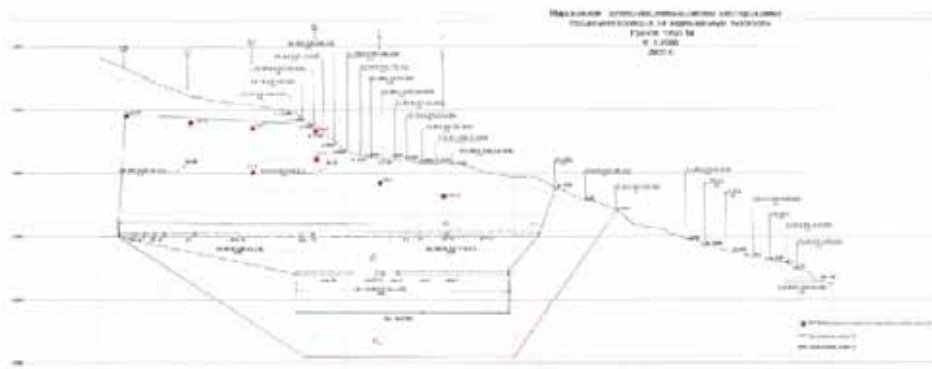
## **25.0 Additional Requirements for Technical Reports on Development Properties and Production Properties**

This section is not applicable.

## Appendix I: Historical Cross Sections for Soviet Resource Calculation

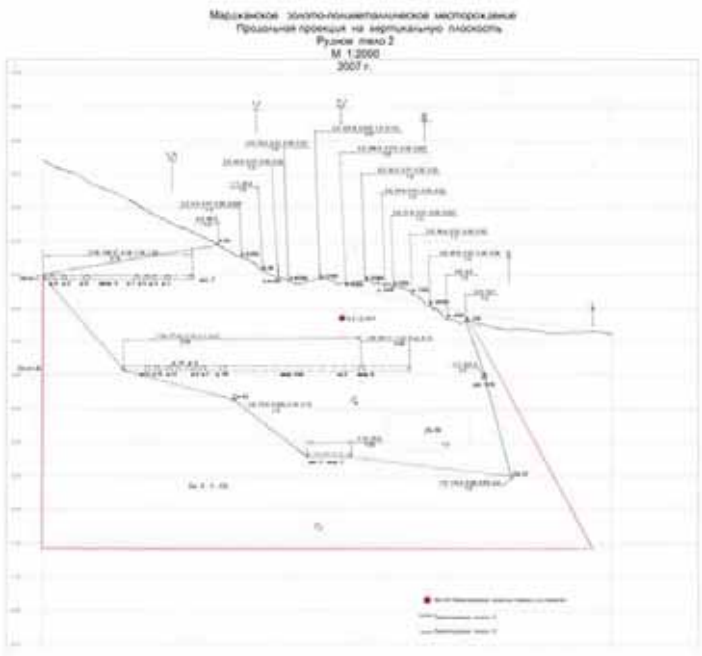


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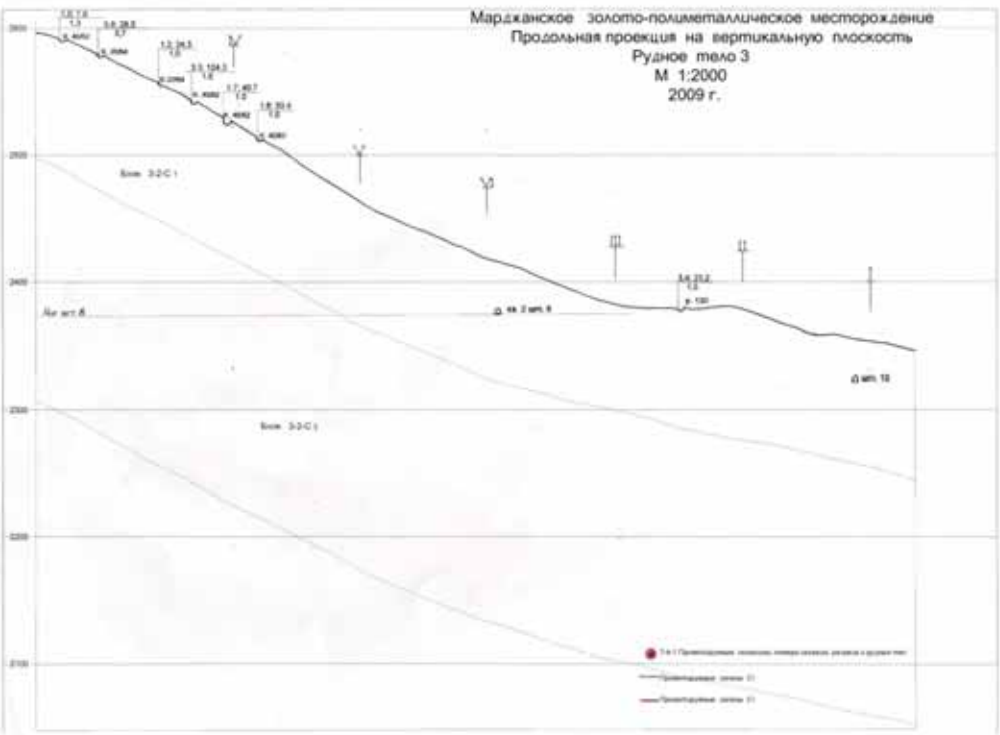


1a





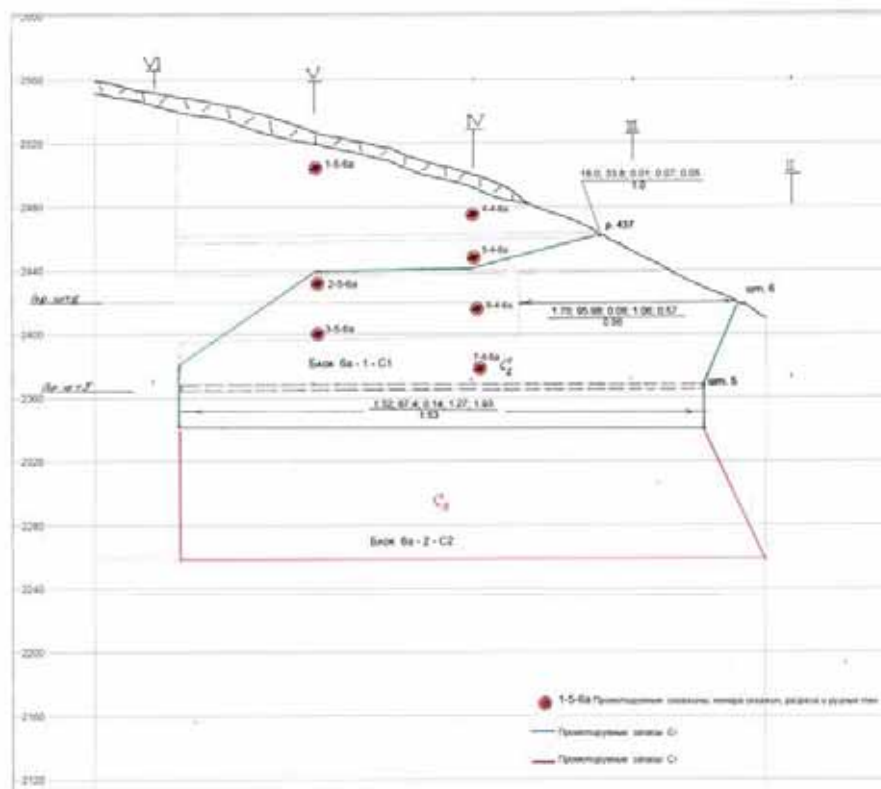
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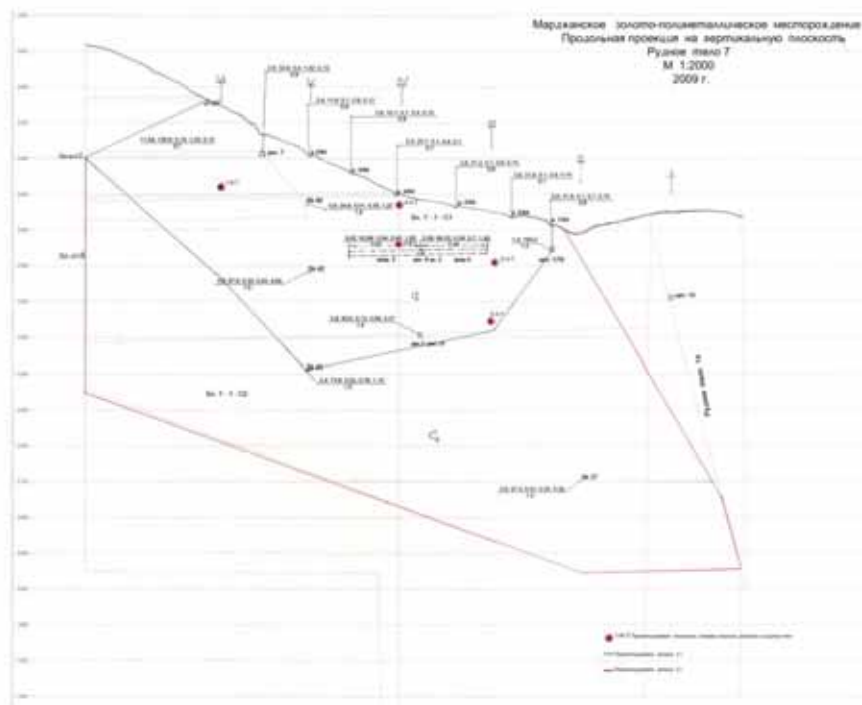
3



Марджанское золото-полиметаллическое месторождение  
Продольная проекция на вертикальную плоскость  
Рудное тело ба  
М 1:2000  
20079 г.



ба





## Appendix II: Transfer of Mining Rights to Marjan Mining Company, LLC

FROM : FAX NO. : Mar. 15 2010 07:58PM P1

UNOFFICIAL TRANSLATION  
MINISTER OF ENERGY AND NATURAL RESOURCES

N 16 - A  
12.03.2010

Decree

ON TRANSFER OF MINING RIGHTS

Pursuant to Article 13 of Armenian Mining Code, Article 11 and Article 16 of Armenian Concession Law, and following the Minister of Energy and Natural Resources Decree N 39 - N on the "Procedure of Transfer of Mining Rights" dated October 27, 2008,

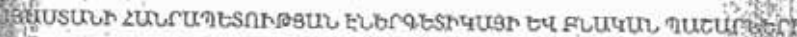
I HEREBY DECREE

1. Transfer mining rights of Marjan gold - polymetallic mine held by Global Gold Hankavan, LLC confirmed by April 22, 2008 mining Special License HA - L - 14/526 and License Agreement 411 to Marjan Mining Company, LLC, establishing the term for mining for the property until 22.04.2033.
2. The Head of Concession Agency:
  - 1) implement the established by the Minister of Energy and Natural Resources Decree N 39 - N on the "Procedure of Transfer of Mining Rights" dated October 27, 2008 while transferring the mining rights provided in point 1 of this Decree;
  - 2) within 3 months period make corresponding changes in the documents of the mining rights;
  - 3) to make corresponding amendments in the Special License HA - L - 14/526;
  - 4) to make necessary registrations in the mining rights centralized registry.
3. I am responsible for the implementation of this Decree.

Signature

A. Movsesyan





16-2h  
102.03 2010p

[illegible]

Այսօրվա ժամը Մաքրամի ոսկի-բազմաժանրային համերգային նկատմամբ՝ «Գլորա Վոկալ-Կամբակամ» ՄԻ ընկերության հանրային իրավունքները հավաստված՝ 2008 թվականի մարտի 22-ի հանրաքվային համաձայն ՀՄԼ-14/526 հատուկ լիցենզիայով և լիցենզային քիվ 411 պատմաճարտուկ, փոխանցել «Մաքրամ Մայրանգ Զուրկանյան» ՄԻ ընկերությանը՝ սահմանելով համերգային շահագործման ժամկետ՝ մինչև 22.04.2033թ.:

Կնքվելու են հոնոարարական պետ Կ. Հակոբյանին՝

1) Կպելն հրամանի 1-ին կետում սահմանված համերգային իրավունքների փոխանցումը իրավունքների ուղեկցվողով Մայրաքաղաքի 2008 թվականի հոկտեմբերի 27-ի քիվ 39-Ն համաձայն՝ հաստատված համերգային իրավունքների փոխանցման ըմբաստանագրությամբ:

2) Կպելն սահմանված համերգային իրավունքը հավաստող փաստաթղթերում կատարելով համերգային շահագործման փոխադրություններ:

3) Այսօրվա խմամուտատախան ճշազգումներ համերգային համաձայն ՀՄԼ-14/526 հատուկ լիցենզիայով:

4) Կպելն փոխվել համերգային իրավունքների կենտրոնական գրասենյակում գրանցամատյանում համերգային շահագործման ըմբաստանագրություն:

5) Այսօրն հրամանի կատարման հսկողությունը վերապահում են ինձ:

## II. បង្កើនប្រសិទ្ធភាព



ՀԱՅԱՍՏԱՆԻ ՀԱՆՐԱՊԵՏՈՒԹՅՈՒՆ  
ԱՌԵՎՏՐԻ ԵՎ ՏՆՏԵՍԱԿԱՆ ԶԱՐԳԱՑՄԱՆ  
ՆԱԽԱՐԱՐՈՒԹՅՈՒՆ

375010, Երևան, Մ.Մարտիրոսյան 5  
հեռ. 56-40-17

## ՀԱՆՔԱՐԴՅՈՒՆԱՀԱՆՄԱՆ ՀԱՏՈՒԿ

**ԼԻՑԵՆԶԻԱ ՀԱ-Լ-14/526**

Տրման ամսաթիվ 22.04.2008թ

Գործողության ժամկետ (մինչև 25 տարի) 22.04.2008թ-ից մինչև 22.04.2033թ

Համընթաց իրավունք կրողի անվանումը և գտնվելու վայրը «Գլուխ Գույր Համընթաց» ՍՊԸ  
(ամիսատ ձեռնարկատիրոջ դեպքում՝ անունը և բնակության վայրը)  
ք. Երևան Զարյան 1/1

Համընթաց իրավունք կրողի պետական գրանցման վկայականի համար 03Ա 053303

Արդյունահանվող օգտակար հանածո(ներ) ոսկի - ընդամենա

Սյունիքի մարզի Մարշալի ռազմամեծազգյի համրակայքի, կենտրոնական տեղամասի և քանի

Համընթացի հաստատված պաշարների մասին տեղեկություններ

Ընտանոցը մտնում է տրամադրված ըստ C1 կարգի՝ 593.2 հազ տ և C2 կարգի 4114.6 հազ տ համընթաց

Հատուկ պայմաններ (նշել ընդունելով հանցագրությունում նշված դրույթները)

Տարեկան արդյունաբերականությունը 200.0 հազ տ: համընթաց Տեղամասի մոտակայքի՝ 1960.6 հա

C1 կարգի- Au-1776.2կգ, Ag-50.1տ, Cu-0.64 հազ տ, Zn-5.2հազ տ, Pb-7.7 հազ տ

C2 կարգի- Au- 10221.4կգ, Ag- 385.1 տ, Cu-5.6 հազ տ, Zn- 41.5հազ տ, Pb-49.2 հազ տ

Լիցենզիայով տրամադրված ընդերքի տեղամասի նկարագրությունը և հատակագիծը բերված է տույն լիցենզիայի հավելվածում:

Լիցենզիան ուժի մեջ է մտնում ըստ պատասխան լիցենզիայի պայմանագրի կնքման պահից և գործում է լիցենզիայի տվյալներով գործողության ժամկետով:

Հայաստանի Հանրապետության  
առևտրի և արդյունաբերության նախարար  
Մ. Մարտիրոսյան

Գ. Տ

