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JAGUAR MINING INC.

TECHNICAL REPORT ON THE ROÇA GRANDE AND PILAR MINES, MINAS GERAIS STATE, BRAZIL

NI 43-101 Report

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1 SUMMARY

EXECUTIVE SUMMARY

Roscoe Postle Associates Inc. (RPA) was retained by Jaguar Mining Inc. (Jaguar) to assist in preparation and audit of the Mineral Reserve and Mineral Resource estimates for the Caeté Gold Complex, including the Roça Grande and Pilar mines, located in Minas Gerais, Brazil. The purpose of this report is to support disclosure of the updated Mineral Reserves and Mineral Resources. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects. RPA visited the Roça Grande Mine on November 22, 2014 and December 14, 2017. RPA visited the Pilar Mine on November 21, 2014 and December 13, 2017.

Jaguar is a Canadian-listed junior gold mining, development, and exploration company operating in Brazil with three gold mining complexes. Jaguar's principal operating assets are located in a greenstone belt in the state of Minas Gerais. The common shares of Jaguar are currently listed on the TSX Venture Exchange under the symbol JAG.

The Caeté Gold Complex is operated by Mineração Serras do Oeste (MSOL), a wholly-owned subsidiary of Jaguar. The Caeté Gold Complex includes a processing plant with a nominal capacity of 2,050 tpd, with separate tailings disposal areas for both fine flotation tailings and carbon-in-pulp (CIP) tailings. Electrical power supply is provided through the national power grid. The process plant is located at the Roça Grande Mine.

The process plant treats ore produced from two mines. The Roça Grande Mine produced at a rate of approximately 200 tpd in 2017. The Pilar Mine produced at a rate of approximately 1,000 tpd in 2017.

Tables 1-1 and 1-2 summarize the Mineral Resource and Mineral Reserve estimates for the Caeté Gold Complex as of December 31, 2017. Canadian Institute of Mining, Metallurgy and Petroleum (CIM) for Mineral Resources and Mineral Reserves dated May 10, 2014 (CIM (2014) definitions) were followed for Mineral Resources and Mineral Reserves. No Mineral Reserves are currently estimated for the Roça Grande Mine.

RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other factors that could materially affect the Mineral Resource and Mineral Reserve estimates.

TABLE 1-1 SUMMARY OF MINERAL RESOURCES - DECEMBER 31, 2017

Jaguar Mining Inc. – Caeté Operations

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Roça Grande Mine:			
Measured	190	2.14	13
Indicated	897	2.91	84
Sub-total M&I	**1,087**	**2.77**	**97**
Inferred	1,759	3.48	197
Pilar Mine:			
Measured	2,203	4.47	317
Indicated	1,589	4.22	216
Sub-total M&I	**3,792**	**4.37**	**532**
Inferred	2,367	5.69	433
Total, Caeté Operations:			
Measured	2,393	4.29	330
Indicated	2,486	3.75	300
Sub-total M&I	**4,879**	**4.09**	**630**
Inferred	4,126	4.75	630

Notes:
1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at a cut-off grade of 1.46 g/t Au for the Roça Grande Mine and 1.93 g/t Au for the Pilar Mine.
3. Mineral Resources are estimated using a long-term gold price of US$1,400 per ounce.
4. Mineral Resources are estimated using an average long-term foreign exchange rate of 3.8 Brazilian Reais: 1 US Dollar.
5. Mineral Resources for the Roça Grande Mine are prepared by depletion of the 2015 grade-block model by the excavation volumes as of December 31, 2017.
6. A minimum mining width of approximately 2 m was used.
7. Gold grades are estimated by the inverse distance cubed interpolation algorithm using capped composite samples for the Roça Grande Mine. Gold grades were estimated by the ordinary kriging interpolation algorithm using capped composite sample for the Pilar Mine.
8. No Mineral Reserves are currently present at the Roça Grande Mine. Mineral Resources are inclusive of Mineral Reserves for the Pilar Mine.
9. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
10. Numbers may not add due to rounding.

TABLE 1-2 SUMMARY OF PILAR MINERAL RESERVES – DECEMBER 31, 2017
Jaguar Mining Inc. – Caeté Operations

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Proven	666	3.78	81
Probable	307	4.45	44
Total	**974**	**3.99**	**125**

Notes:
1. CIM (2014) definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated at a break-even cut-off grade of 2.33 g/t Au.
3. Mineral Reserves are estimated using an average long-term gold price of US$1,250 per ounce and a US$/BRL$ exchange rate of 3.5.
4. A minimum mining width of approximately 2 m was used.
5. Numbers may not add due to rounding.

CONCLUSIONS

Measured and Indicated Mineral Resources at Pilar have increased year-over-year, due to positive diamond drilling results and updated resource modelling, while Mineral Reserve estimation replaced depletions from production. The Life of Mine Plan (LOMP) for the Caeté Gold Complex forecasts a mine life of three years, and production of approximately 40,000 ounces per year. The plant has capacity to process more ore, should it become available.

Conclusions by area are discussed in more detail below.

GEOLOGY AND MINERAL RESOURCES

Roça Grande Mine

- The mineralization at the Roça Grade Mine consists of a number of thin, moderately dipping tabular bodies. These tabular bodies are grouped into five Orebodies (RG01, RG02, RG03, RG06, and RG07).

- The main production of the mine has been from the RG01 and RG07 Orebodies, although a small amount of gold was produced by means of open pit mining from the RG03 and RG06 Orebodies. The RG01, RG02, RG03, and RG06 Orebodies are strataform to stratabound mineralized portions of a banded iron formation (BIF) assemblage which dip moderately to the southeast. The RG07 Orebody is comprised mostly of a quartz vein which is hosted by a BIF.

- The updated Mineral Resource estimate for the Roça Grande Mine was prepared based on drilling and channel sample data using a data cut-off date of June 30, 2015. The database comprises 649 drill holes and 6,517 channel samples. The estimate was generated from a block model constrained by 3D wireframe models that were constructed using a minimum width of one metre. The purpose of the minimum width criteria was to attempt to identify any areas of high grade mineralization that could be candidates for extraction using highly selective underground mining methods. A minimum width criteria was subsequently applied to the Mineral Resource reporting criteria by using a minimum grade times thickness product of 3 gram-metres. Raw assays were capped to 30 g/t Au for the RG01 and RG06 Orebodies while a capping value of 50 g/t Au was applied for the RG02, RG03, and RG07 Orebodies. The Mineral Resources are reported using the gold grades estimated by the ID^3 method. The wireframe models of the mineralization remained unchanged from 2015. The wireframe models of the excavated volumes for the Roça Grande Mine were constructed using the information available as of December 31, 2017.

- The mineralized material for each Orebody was classified into the Measured, Indicated, or Inferred Mineral Resource categories on the basis of the search ellipse ranges obtained from the variography study, the observed continuity of the mineralization, the drill hole and channel sample density, and previous production experience with these orebodies.

- The Mineral Resource reports were prepared by creating clipping polygons that were used to ensure that the requirement for spatial continuity is met. The reporting polygons were prepared in either plan or longitudinal views, as appropriate. They were drawn to include continuous volumes of blocks whose estimated grades were above the stated cut-off grade, were located completely within the boundaries of Jaguar's mineral rights holdings at the Roça Grande Mine, possessed a grade times thickness product of at least 3 gram-metres, and were not located in mined out areas. These resource polygons were also used to exclude isolated blocks with limited to no spatial continuity but containing grades above the nominated cut-off.

- At a cut-off grade of 1.46 g/t Au, the Measured and Indicated Mineral Resources at the Roça Grande Mine total 1.09 million tonnes, at a grade of 2.77 g/t Au, containing 97,000 ounces of gold. In addition, Inferred Mineral Resources total 1.76 million tonnes, at a grade of 3.48 g/t Au, containing 197,000 ounces of gold.

Pilar Mine

- The mineralization at the Pilar Mine comprises a number of sub-parallel, quartz-rich mineralized lenses which have an average strike of 015°, and dip steeply to the east with an average dip of 65°. The available drill hole information suggests that the dip of the mineralized zones may begin to flatten to approximately 45° below the 120 m elevation. Three of the mineralized zones (BA, BF, and BF II) have been identified by drill hole and channel sample data to be isoclinally folded, with fold axes that plunge at approximately -40° to the southwest (approximately azimuth 210° to 225°). Many of the remaining mineralized zones (LFW, LPA, LHW, and the Torre Orebodies) are interpreted to be more tabular in overall form. The LPA zone resides in the axial plane of the folded BF zone and thus provides evidence for multiple ages of gold mineralization.

- Examination of the three dimensional relationship of the Torre Orebody to the modelled outline of the BIF units shows that the overall dip of this mineralization gradually decreases with depth. This occurs with a change from the BIF to the enclosing chlorite schist units, such that an increased level of vigilance will be required of the core logging geologists to recognize and correctly sample potentially economic mineralization that is located by host rocks other than the BIF.

- Diamond drilling programs carried out in 2016 and 2017 were successful in outlining significant gold grades across mineable widths along the down-plunge continuations of the BA, BF, and BF II Orebodies, below the current active mining areas. The results from these drill holes have been incorporated into the updated block model. Additional work that will provide further detailed information of the gold distribution in this area is warranted and justified.

- As a result of the additional information collected from the recently completed drilling programs, along with production information collected from detailed mapping and sampling programs, the level of understanding of the relationship of the mineralized zones to the host stratigraphy and structure is increasing.

- The updated Mineral Resource estimate for the Pilar Mine was prepared based on drilling and channel sample data using a data cut-off date of November 28, 2017. The database comprises 1,366 drill holes and 19,838 channel samples. The estimate was generated from a block model constrained by 3D wireframe models that were constructed using a minimum width of two metres. Raw assays were capped to 10 g/t Au for the LHW lenses, 20 g/t Au for the LFW, LPA and SW Orebody lenses, 30 g/t Au for the BF II and C Orebody lenses and 60 g/t Au for the BA and BF Orebodies. Gold grades were estimated using the inverse distance cubed (ID^3) and ordinary kriging (OK) methods. The wireframe models of the mineralization and excavated material for the Pilar Mine were constructed using the excavation information as of December 31, 2017.

- The mineralized material for each wireframe was initially classified into the Measured, Indicated, or Inferred Mineral Resource category on the basis of the search ellipse ranges obtained from the spatial continuity study, the demonstrated continuity of the gold mineralization, the density of drill hole and chip sample information, and the presence of underground access. A post-processing clean-up step was applied in a final stage of the classification process to ensure continuity and consistency of the classified blocks in the model.

- Reconciliation studies carried out using the short-term block model for the 2016 and 2017 production period clearly demonstrate that the sampling and assaying protocols, along with the block model estimation work flow are producing reliable predictions of the tonnage and grade received at the processing plant.

- Additional Mineral Resources are present that reside beyond the Mineral Reserves outlines as a result of the lower cut-off grade used for reporting of Mineral Resources. These are located as remnants above Level 11 (the limit of the current development) or as additional mineralized areas peripheral to the Mineral Reserve outlines in areas located below the current development. Three-dimensional resource polygons were prepared to aid in the estimation and reporting of the Mineral Resources to ensure that the requirement for spatial continuity is met. The reporting polygons were prepared in either plan, section or longitudinal views, as appropriate. They were drawn to include continuous volumes of blocks whose estimated grades were above the stated cut-off grade, and were not located in mined out areas. These resource polygons were also used to exclude isolated blocks with limited to no spatial continuity but containing grades above the nominated cut-off. These resource polygons were used to appropriately code the block model and were used to report the Mineral Resources.

- At a cut-off grade of 1.93 g/t Au, the Measured and Indicated Mineral Resources at the Pilar Mine total 3.79 million tonnes, at a grade of 4.37 g/t Au, containing 532,000 ounces of gold. In addition, Inferred Mineral Resources total 2.37 million tonnes, at a grade of 5.69 g/t Au, containing 433,000 ounces of gold.

MINING AND MINERAL RESERVES

Roça Grande Mine

- Although small amounts of production were realized from the Roça Grande Mine in 2016 and 2017, Mineral Reserves are not currently estimated.

Pilar Mine

- At a cut-off grade of 2.33 g/t Au, the Proven and Probable Mineral Reserves at the Pilar Mine comprise 0.97 million tonnes at an average grade of 3.99 g/t Au containing 125,000 ounces of gold.
- Total dilution included in reserves averages approximately 25%, which is a good match for measured results for 2017 mining.
- The LOMP for Pilar Mine forecasts three years of production, at rates ranging from 800 tpd to 1,100 tpd. Gold production is forecast to average 40,000 ounces per year.
- RPA reviewed a LOMP cash flow model that confirms the economic viability of the Mineral Reserves, at a gold price of US$1,250/oz and an exchange rate of US$1.00=BRL3.5.
- It is RPA's opinion that the Pilar Mineral Reserve estimates were prepared in a professional and diligent manner by qualified professionals and that the estimates comply with CIM (2014) definitions.

PROCESSING

- In RPA's opinion, the processing circuit unit operations are reasonable to recover gold and provide for adequate tailings treatment for cyanide destruction. Operations have improved over time, resulting in higher recoveries, however, full capacity has not been tested due to lack of plant feed.

ENVIRONMENT AND PERMITTING

- RPA is not aware of any environmental liabilities on the property. Jaguar has all required permits to conduct the proposed work on the property. RPA is not aware of any other significant factors and risks that may affect access, title, or the right or ability to execute the proposed LOMP on the property.

LIFE OF MINE PLAN

- The current LOMP leaves significant capacity for processing more material, should it become available, or conversely, to explore cost saving measures at the plant such as weekend shutdowns or campaign milling.
- RPA reviewed capital and operating cost estimates prepared by Jaguar, and found them to be reasonable.

RECOMMENDATIONS

RPA's recommendations by area are summarized below.

GEOLOGICAL DATA

- Continue preparation and updating of the written procedures for such tasks as the collection of geological and sampling information, database management and administration, and preparation of Mineral Resource estimates.

- Continue with database validation exercises focusing specifically on reducing the error rates for the collar and survey tables in the drill hole database.

- Carry out a program of re-sampling be undertaken where any un-sampled intervals that are located within the mineralized wireframe boundaries be re-sampled, as the availability of drill core permits.

- Update the drill hole sampling protocols to ensure that full sampling coverage is obtained for all mineralized zones as part of the normal-course logging and sampling procedures. Preparation of current drill hole plans and sections by the logging geologist in either physical or digital format that show the location of the current drill hole relative to the remainder of the drilling information will greatly assist in achieving this goal.

- Amend the data management protocols to include the secured archiving of all digital information that was used to prepare any Mineral Resource or Mineral Reserve estimates on the Jaguar server(s). Primary copies of all digital files could be archived in secured folders on the servers at each of the mine sites, while duplicate copies of all digital files could also be stored in secured folders on the Jaguar Corporate server located in Belo Horizonte.

ASSAY LABORATORY

- The certificate number for each assay batch should be included into the central BDI database.

- The central BDI database should be updated to store drill core recovery, channel sample recovery, and sample tracking (lost sample) information. This will assist in deciding how to address null values in future resource estimates.

- The Quality Assurance/Quality Control (QA/QC) program should be amended to include the channel samples.

- At present the pulverizers are cleaned with compressed air and a polyester fibre brush after each sample. As a minimum, the pulverizers should be cleaned with a wire brush. No special protocols are in place to clean the pulverizers after passing a sample of known high gold grade. The pulverizers should be cleaned with silica sand after processing each known high grade sample.

- All gold grades are determined by fire assay (FA)–atomic absorption (AA). The AA unit is currently calibrated to direct-read gold values up to 3.3 g/t. Any samples containing gold values in excess of this are analyzed by diluting the solute. High grade samples should be determined using a gravimetric method.

- The assay laboratory automatically re-assays all samples containing gold grades greater than 30 g/t Au, and the average of the re-assays are reported to the sites. All sample results should be reported to the site, without averaging.

- The threshold of 30 g/t Au is high. Re-assay thresholds of 10 g/t Au to 15 g/t Au are commonly used in other gold operations.

- The results from assays of all aliquots be reported by the laboratory and recorded in the drill hole database. The current database structure will require slight modification to allow for recording of all assay results for a given sample. The final assay for the sample will then be the average of all of the assay results.

MINERAL RESOURCES

- Structural mapping information should be integrated with isopach maps of the carbonate iron formation at the Roça Grande Mine and trend analyses of the gold distribution to identify any primary controls on the distribution of the BIF-hosted gold mineralization.

- Preparation of a detailed geological model for the Roça Grande Mine will aid in understanding the controls on the distribution of the gold mineralization.

- Preparation of a three dimensional model of the major regional fault encountered in the Vale railroad tunnel using all available data will greatly assist in development of exploitation strategies for the Mineral Resources contained within the RG02 Orebody at the Roça Grande Mine.

- Execution of a detailed geological and structural mapping program at the Pilar Mine is warranted. This information will assist in furthering the understanding of the detailed relationships between the host rocks and timing of the various episodes of mineralization and faulting.

- Continued collection of detailed density measurements of the mineralization at the Roça Grande and Pilar mines is warranted.

- In-fill drilling on the RG01 Orebody along the down-plunge projection of the encouraging drilling results is warranted.

- In-fill drilling of the mineralization found below Level 11 at the Pilar Mine is warranted. The goal of this drilling program is to increase the confidence in the distribution of the mineralization and to assist in the preparation of mine schedules.

- A detailed geological review of the controls on the mineralization contained within the SW Orebody at the Pilar Mine should be carried out to aid in selecting high priority areas for future exploration programs.

- Amendment of the cut-off grade strategy used for preparation of the mineralization wireframes is warranted to better reflect the potentially economic in-situ gold grades. As a minimum, mineralization wireframes should be created using the incremental cut-off grade for the Pilar and Roça Grande mines, respectively.

- Expand the reconciliation procedures to include an evaluate the accuracy of the long-term block model relative to the short-term block model to begin to gauge the optimal drill hole spacing required for preparing Mineral Resource estimates.

- Use of a partial percentage attribute in the block models for the mined out volumes will aid in improving the reconciliation results.

- A detailed evaluation of those Mineral Resources contained within the area of the current mine workings as possible additional feed sources at both the Pilar and Roça Grande mines is warranted.

MINERAL RESERVES

- Efforts to reduce dilution should continue, and measurements using cavity monitoring systems (CMS) should be used to analyze dilution by mining type. Measured results should be used to choose inputs to the reserve estimation process.

LIFE OF MINE PLAN

- Review alternative feed sources to utilize unused capacity at the process plant.

- Review alternatives for the plant operating schedule.

- Review the remnant resources above the current mining horizon and determine what can be added to the LOMP and converted to Mineral Reserves.

TECHNICAL SUMMARY

PROPERTY DESCRIPTION AND LOCATION

The Caeté Mining Complex is located to the east of Belo Horizonte, the capital city of the state of Minas Gerais. The Roça Grande and Pilar mines are located in the municipalities of Caeté and Santa Bárbara, respectively, in the state of Minas Gerais, Brazil. Caeté (35,000 inhabitants) and Santa Bárbara (30,000 inhabitants) are comparably sized towns, located 55 km and 110 km, respectively, from Belo Horizonte. The two towns have good urban infrastructure, including banks, hospitals, schools, and commercial businesses.

The Pilar ore is transported to the plant by trucks using paved and dirt public roads totalling 45 km.

Belo Horizonte is the capital and also the largest city of the state, with a population in excess of four million. It is the major centre for the Brazilian mining industry. A large commercial airport with domestic and international flights services Belo Horizonte, which hosts several state and federal government agencies and private businesses that provide services to the mining industry.

Jaguar maintains a corporate office in Belo Horizonte.

LAND TENURE

The land tenure package for the Caeté Mining Complex comprises 23 mining leases and exploration concessions granted by the National Department of Mineral Production (DNPM), and four surface rights holdings. The mining leases and exploration concessions cover an area totalling 14,199.52 ha. The surface rights holdings comprise ten separate agreements that cover a total area of 751.17 ha.

Mining leases are renewable annually and have no set expiry date. Each year Jaguar is required to provide information to DNPM summarizing mine production statistics.

Jaguar is obligated to pay a royalty equivalent to 1% of net sales to DNPM. In addition, one royalty payment (0.5% of gross profits) and three lump-sum annual rental payments (totalling BRL479,000) are associated with the Caeté Mining Complex.

RPA is not aware of any environmental liabilities on the property. Jaguar has all required permits to conduct the proposed work on the property. RPA is not aware of any other significant factors and risks that may affect access, title, or the right or ability to execute the proposed LOMP on the property.

EXISTING INFRASTRUCTURE

The Caeté Mining Complex includes a nominal 2,050 tpd processing plant with separate tailings disposal areas for both fine flotation tailings and CIP tailings. The electrical power supply is provided through the national power grid. The process plant is located at the Roça Grande Mine at an elevation of approximately 1,250 MASL.

An administration complex is located at the entrance to the plant site, with such ancillary buildings as offices, conference rooms, cafeteria, maintenance shops, compressors (mine and mill), a dry, a first aid station, warehouse, backfill preparation, and a water treatment plant, which is located near the process plant. The assay laboratory and process testing laboratory are also located near the process plant. The Roça Grande Mine is accessed by an adit that is located approximately 800 m to the southwest of the plant at an elevation of approximately 1,100 MASL. Trailers located at the mine adit provide local storage and office space. The explosives and blasting accessories warehouses are located 3.5 km away from the mine area, in compliance with the regulations set forth by the Brazilian Army.

The surface infrastructure at the Pilar Mine is limited to shops, offices, cafeteria, first aid, and warehouse facilities. The mine is accessed by an adit that is located at an elevation of approximately 750 MASL.

HISTORY

Initial exploration activities carried out by Vale between 1973 and 1993 in the Roça Grande Mine area consisted of regional geological, geochemical and geophysical surveys, along with excavation of a number of exploration trenches and diamond drilling to evaluate the gold mineralization found in the area. Vale also carried out geological mapping, geological interpretation, and exploration and in-fill drilling at the Pilar deposit.

In December 2003, Jaguar acquired the Santa Bárbara property, which includes the Pilar mineral concessions, from Vale. In November 2005, Jaguar entered into a mutual exploration and option agreement with Vale that resulted in final transfer of the Roça Grande concessions to Jaguar in December 2010 and August 2011 (Jaguar 2015b).

Jaguar initiated exploration activities at Pilar in 2006 and initially contemplated building a sulphide plant on site, however, the acquisition of the Roça Grande concessions created an opportunity to develop an expanded project, with greater plant capacity to receive ore from several mineral properties.

In December 2008, Jaguar began transporting ore by truck from the Pilar Mine to the Paciência Plant to supplement the ore being supplied from Paciência's Santa Isabel Mine.

In 2007, Jaguar completed a scoping study of the Caeté Project, received the Implementation Licence, and secured the power contract for the start-up. A feasibility study was completed in 2008, and by the end of the third quarter, Jaguar initiated construction for the milling and treatment circuits. After a hiatus due to the 2008/2009 disturbance in global markets, construction resumed and the Caeté plant was commissioned in June 2010. The first gold pour was conducted in August 2010 and commercial production was declared in October 2010.

Production for the Caeté Mining Complex is summarized in Table 1-3.

TABLE 1-3 CAETÉ MINING COMPLEX PRODUCTION
Jaguar Mining Inc. – Caeté Operations

	Pilar Production		Roça Grande Production		Caeté Plant Production			
Year	**Tonnes**	**g/t Au**	**Tonnes**	**g/t Au**	**Tonnes**	**g/t Au**	**Recovery**	**Ounces Produced**
2008	6,000	5.95						
2009	121,000	4.20						
2010	311,000	3.39	80,000	2.30	258,000	2.87	93%	17,595
2011	473,000	3.35	166,000	2.30	634,000	3.08	87%	53,175
2012	422,000	3.11	172,000	2.72	594,000	3.00	89%	50,331
2013	454,000	3.04	158,000	2.72	612,000	2.96	88%	51,429
2014	421,000	2.66	175,000	2.32	596,000	2.56	88%	43,228
2015	309,000	3.27	159,000	2.26	468,000	2.93	90%	39,763
2016	296,000	3.35	89,000	2.16	380,000	3.02	90%	33,351
2017	335,000	3.80	69,000	2.51	406,000	3.27	91%	38,685
Total	**3,120,000**	**3.44**	**1,115,000**	**2.59**	**4,055,000**	**2.91**	**88%**	**334,000**

Notes:
1. From 2008 to 2011, some of Pilar ore was processed at Paciência.
2. From 2010 to 2012, open pit oxide ore from Roça Grande was mined and processed.

GEOLOGY AND MINERALIZATION

REGIONAL GEOLOGY

The Roça Grande and Pilar deposits are located in the eastern part of the Iron Quadrangle. Gold has been produced from numerous deposits, primarily in the northern and southeastern parts of the Iron Quadrangle, most hosted by Archean or Early Proterozoic BIFs contained within greenstone belt supracrustal sequences.

In the Brumal region, outcrops belonging to the granitic gneiss basement of the Nova Lima and Quebra subgroups of the Rio das Velhas Supergroup occur. The granitic gneiss basement is comprised of leucocratic and homogeneous gneisses and migmatites, making up a complex of an initial tonalitic composition intruded by Archean-aged rocks of granitic composition. The Rio das Velhas Supergroup is regionally represented by schists of the Nova Lima Group and meta-ultramafic rocks of the Quebra Group including serpentinites, talc schists, and metabasalts. The rocks of the Nova Lima Group have been folded and sheared along a northeast-southwest regional trend.

Iron formations occur as the only metasediments in layers with thicknesses up to 10 m. The Nova Lima Group can be subdivided into two units: a unit consisting of talc chlorites and intercalations of iron formation, fuchsite schist, quartz sericite schist, and carbonaceous phyllite; and a unit hosting sulphidized gold bearing iron formation and quartz sericite schists.

ROÇA GRANDE DEPOSIT

The Roça Grande Mine is located in the upper unit of the Nova Lima Group. The dominant rock types found in the mine are a mixed assemblage of meta-volcanoclastics and meta-tuffs. These are represented by quartz sericite and chlorite schists with variable amounts of carbonate facies BIF, oxide-facie BIF, metacherts, and graphitic schists. The iron formations, chert units, and graphitic schist units are intimately inter-bedded with each other, such that they form an assemblage of chemical and clastic sedimentary units.

Two important BIF horizons are present at the Roça Grande Mine, the North Structure (Structure 1) which hosts the RG01 mineralized body and the South Structure (Structure 2) hosts the RG02, RG03, and RG06 mineralized bodies. The RG07 mineralized body is located immediately in the hanging wall of Structure 1 and is hosted mostly by a quartz vein. The bedding is well defined by the carbonate-facies iron formation and chert found in the BIF horizons, with an overall strike of azimuth 70º to 80º, and dipping approximately 30º to 35º south.

At Roça Grande, gold mineralization is most commonly associated with BIF horizons. In RG01, RG02, RG03, and RG06 mineralized bodies, the gold mineralization is developed roughly parallel to the primary bedding and is related to centimetre-scale bands of massive to disseminated pyrrhotite and arsenopyrite. In many cases, better gold values are located along the hangingwall contact of the iron formation sequence and is hosted by carbonate-facies iron formation. The grades generally decrease towards the footwall where the iron formation becomes more silica-rich.

In the RG07 mineralized body, gold is found to be hosted in quartz veins that are contained within a sericite (chlorite) schist associated with an east-west oriented shear zone (Machado 2010).

PILAR DEPOSIT

The Pilar deposit is hosted by the basal units of the Nova Lima Group. The rocks in the region of the mine are comprised of tholeiitic basalts and komatiite flows of the Ouro Fino and Morro Vermelho Units, along with their intrusive equivalents. To the west, these basal units are in fault contact with mica-quartz schists, chlorite-quartz schists, chlorite-sericite schists, and chemical and clastic sedimentary rocks of the Santa Quitéria Unit. The chemical sedimentary rocks include chert and BIF. To the east, the units are in fault contact with migmatites and granitic gneisses of the Bação Complex that form the basement sequence.

On the mine property, all rock units strike in a northeasterly direction. The regional strike of the units changes to a southeasterly direction to the south of the mine property. Regional mapping has found that the foliations mostly dip steeply to the southeast. The regional-scale thrust faults also strike in a northeasterly direction and dip steeply to the southeast on the mine property.

On the property scale, at least three different orientations of faults are recognized. The earliest fault is the northeasterly-striking regional-scale thrust fault that forms the contact between the Santa Quitéria Unit and the Ouro Fino and Morro Vermelho Units. This thrust fault cross-cuts and terminates a more northerly set of faults that have a strike of approximately 020° and dip steeply to the east. The third set of faults are oriented in an east-west orientation and have subvertical dips. The displacement along these faults has been observed in underground exposures to be in the order of one to two metres.

The host rocks of the mine have been affected by at least one period of folding. Structural mapping on the property has shown that the orientation of the fold axes dip approximately 45° to the southeast (azimuth 135°).

The mineralization at the Pilar Mine is hosted by a number of the host rock units including the BIFs along with mafic schists and talc-chlorite schists. Gold mineralization is associated with sulphide mineralization consisting of arsenopyrite and pyrrhotite. Quartz veins and veinlets can also be present, however, the presence of quartz is not a prerequisite for higher gold values. The sulphide minerals occur mostly as disseminations in the host rock, however, semi-massive to massive concentrations are seen locally over a few tens of centimetres. Quartz veins are typically less than one metre in width.

MINERAL RESOURCES

ROÇA GRANDE

The updated block model for the Roça Grande Mine is based on drilling and channel sample data using a data cut-off date of June 30, 2015. The database comprises 649 drill holes and 6,517 channel samples. The estimate was generated from a block model constrained by three-dimensional (3D) wireframe models that were constructed using a minimum width of one metre. The purpose of the minimum width criteria was to attempt to identify any areas of high grade mineralization that could be candidates for extraction using highly selective underground mining methods. A minimum width criteria was subsequently applied to the Mineral Resource reporting criteria by using a minimum grade times thickness product of 3 gram-metres. The gold grades are estimated using the ID^3 algorithm using capped composited assays. A capping value of 30 g/t Au was applied for the RG01 and RG06 Orebodies while a capping value of 50 g/t Au was applied for the RG02, RG03, and RG07 Orebodies. The Mineral Resources are reported using the gold grades estimated by the ID^3 method. The wireframe models of the mineralization and excavated material for the Roça Grande Mine were constructed using the excavation information as of December 31, 2017

The mineralized material for each Orebody was classified into the Measured, Indicated, or Inferred Mineral Resource categories on the basis of the search ellipse ranges obtained from the variography study, the observed continuity of the mineralization, the drill hole and channel sample density, and previous production experience with these orebodies.

PILAR

The updated block model for the Pilar Mine is based on drilling and channel sample data using a data cut-off date of November 28, 2017. The database comprises 1,366 drill holes and 19,838 channel samples. The estimate was generated from a block model constrained by three-dimensional (3D) wireframe models that were constructed using a minimum width of two metres. The gold grades are estimated using the ID^3 and OK estimation algorithms using capped, composited assays. Various capping values were applied to each of the different Orebodies, ranging from 60 g/t Au for the BA Orebody to 10 g/t Au for the LHW Orebody. The Mineral Resources are reported using the gold grades estimated by the OK method. The wireframe models of the mineralization and excavated material for the Pilar Mine were constructed using the excavation information as of December 31, 2017.

The mineralized material for each Orebody was classified into the Measured, Indicated, or Inferred Mineral Resource categories on the basis of the search ellipse ranges obtained from the variography study, the observed continuity of the mineralization, the drill hole and channel sample density, and previous production experience with this deposit.

MINERAL RESERVES

Table 1-2 summarizes the Mineral Reserves for Pilar Mine as of December 31, 2017 based on a gold price of US$1,250/oz. A break-even cut-off grade of 2.33 g/t Au was used to report the Mineral Reserves for the Pilar Mine. While small-scale mining of Mineral Resources was carried out in 2016 and 2017 at Roça Grade Mine, Mineral Reserves are not currently estimated.

RPA is not aware of any known mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimate.

It is RPA’s opinion that the Pilar Mineral Reserve estimates were prepared in a professional and diligent manner by qualified professionals and that the estimates comply with CIM (2014) definitions.

MINING METHODS

At the Pilar Mine, gold mineralization is contained within a shear zone with an average 50^{o} to 60^{o} dip. The mineralization is structurally complex due to intense folding and displacements (up to one metre) due to local faulting. This results in direction changes and pinching and swelling of the vein over relatively short distances.

There are two mining methods in use. The cut and fill method is utilized in the narrower sections of the deposit whereas the longhole method is used in the thicker areas. The current LOMP forecasts longhole mining for a majority of the Mineral Reserves. Recent production rates have been approximately 1,000 tpd.

The mine is accessed from a five metre by five metre primary decline located in the footwall of the deposit. The portal is located at elevation 760 MASL. The mine is divided into levels with Level 01 established at elevation 690 m. Starting at this point, the vertical clearance is 75 m, i.e., Level 02 is at elevation 615 m, Level 03 at elevation 540 m, etc. A three-metre thick sill pillar is left between levels. Sublevels have also been excavated from the main ramp at 20 m vertical intervals to provide for intermediate access to the mining panels. The decline has reached Level 11, a vertical depth of approximately 650 m.

Longhole mining is carried out on a longitudinal retreat sequence, towards a central access. Stopes are 50 m in length and separated by three metre to five metre wide pillars, depending on the thickness of the zone. When the mining of each longhole stope has been completed, the excavation is filled using a combination of development waste and hydraulically placed cemented classified flotation tailings. Once the cement is allowed to set, the next stope in the sequence is drained of excess water and can be mined. The sequence continues until the entire sublevel is mined. Mining then proceeds upward to the next sublevel and the sequence is repeated until the sill pillar is reached. Stopes are mined from several individual levels simultaneously in order to provide the required number of active workplaces needed to meet production targets.

The mine is highly mechanized. Development and mining activities are accomplished with a fleet of five two-boom electric-hydraulic jumbos. Longhole drilling is completed with two Atlas Copco Simba drills. Three six cubic yard Load-Haul-Dump (LHD) units are used for mucking. A fleet of eight Iveco 25 t trucks and four 10 t trucks are used to haul broken rock to surface.

LIFE OF MINE PLAN

Stope and development designs, and production scheduling were carried out using Deswik mine design software, and depleted for stopes mined out as of December 31, 2017.

The production schedule covers a mine life of three years based on Mineral Reserves, and is summarized in Table 1-5.

TABLE 1-5 LOMP PRODUCTION SCHEDULE
Jaguar Mining Inc. – Caeté Operations

Item	Units	2018	2019	2020	Total
Ore Tonnes	Tonnes (`000)	327	314	334	974
	g/t Au	4.18	4.01	3.79	3.99
Total Mill Feed	Tonnes (`000)	327	314	334	974
	g/t Au	4.18	4.01	3.79	3.99
	Ounces (`000)	43.9	40.3	40.6	125
Recovery	%	91%	91%	91%	91%
Gold Produced	Ounces (`000)	40	37	37	114

The current LOMP leaves significant capacity for processing more material, should it become available, or conversely, to explore cost saving measures at the plant such as weekend shutdowns or campaign milling.

MINERAL PROCESSING

The Caeté processing plant has a design capacity of 720,000 tpa of run-of-mine (ROM) ore. In 2017, the plant processed feed from the Pilar and Roça Grande mines. Over the past three years of operation, the Caeté processing plant operated at approximately 60% of its design capacity.

The overall recovery achieved in 2017 was 90.3%.

The process flowsheet primarily consists of the following unit steps.

- Crushing
- Grinding
- Gravity Gold Recovery
- Flotation
- Leaching & Carbon-in-Pulp
- Gold Recovery
- Detoxification
- Tailings

In RPA's opinion, the processing circuit unit operations are reasonable to recover gold and provide for adequate tailings treatment for cyanide destruction. Operations have improved over time, resulting in higher recoveries, however, full capacity has not been tested due to lack of plant feed.

MARKET STUDIES

Gold is freely traded, at prices that are widely known, so that prospects for sale of any production are virtually assured. A gold price of US$1,250 per ounce was used for estimating Mineral Reserves. RPA notes that this price is consistent with consensus long-term forecasts, and prices used by other gold producers.

ENVIRONMENTAL, PERMITTING AND SOCIAL CONSIDERATIONS

RPA is not aware of any environmental liabilities on the property. Jaguar has all required permits to conduct the proposed work on the property. RPA is not aware of any other significant factors and risks that may affect access, title, or the right or ability to execute the proposed LOMP on the property.

As of December 31, 2017, Jaguar has maintained progressive rehabilitation and reclamation provisions of BRL$17.0 million for the Roça Grande Mine and the process plant and BRL$9.6 million for the Pilar Mine which represent the undiscounted, uninflated future payments for the expected rehabilitation costs.

CAPITAL AND OPERATING COST ESTIMATES

Sustaining capital cost estimates for the Caeté Mining Complex were prepared by Jaguar and include primary access development, mine equipment replacement, plant equipment replacement, tailings dam expansion, and mine closure.

TABLE 1-6 CAPITAL COSTS (US$000s)
Jaguar Mining Inc. – Caeté Operations

Description	2018	2019	2020	2021+	Total
Exploration	468				468
Primary Development	7,004	4,875			11,879
Sustaining Mining	1,341	1,341	1,341		4,024
Sustaining Mill	153	153	153		459
Raise 1.8m Dia.	6	98			104
Closure		568	2,045	5,005	7,618
Total	**8,972**	**7,035**	**3,539**	**5,005**	**24,552**

Operating cost estimates for the Caeté Mining Complex were prepared by Jaguar and include mining, processing, and general and administration (G&A) expenses. Table 1-7 summarizes the operating costs.

TABLE 1-7 OPERATING COSTS
Jaguar Mining Inc. – Caeté Operations

	Cost per tonne milled (US$)			
Description	**2018**	**2019**	**2020**	**Average**
Mining	29.20	29.20	29.20	29.20
Secondary Development	43.08	43.08	43.08	43.08
Processing	11.31	11.31	11.31	11.31
G&A	10.42	10.86	10.21	10.49
Total	**94.02**	**94.46**	**93.80**	**94.09**

RPA reviewed the cost estimates in comparison to recent operating results, and found them to be reasonable.

2 INTRODUCTION

Roscoe Postle Associates Inc. (RPA) was retained by Jaguar Mining Inc. (Jaguar) to assist in preparation and audit of the Mineral Reserve and Mineral Resource estimates for the Caeté Gold Complex, including the Roça Grande and Pilar mines, located in Minas Gerais, Brazil. The purpose of this report is to support disclosure of the Mineral Reserves and Mineral Resources as of December 31, 2017. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects.

Jaguar is a Canadian-listed junior gold mining, development, and exploration company operating in Brazil with three gold mining complexes. The company's principal operating assets are located in a greenstone belt in the state of Minas Gerais. The common shares of Jaguar are currently listed on the TSX Venture Exchange under the symbol JAG.

The Caeté Gold Complex is operated by Mineração Serras do Oeste (MSOL), a wholly-owned subsidiary of Jaguar. The Caeté Gold Complex includes a processing plant with a nominal capacity of 2,050 tonnes per day (tpd), with separate tailings disposal areas for both fine flotation tailings and carbon-in-pulp (CIP) tailings. Electrical power supply is provided through the national power grid. The process plant is located at the Roça Grande Mine.

The process plant treats ore produced from two mines. The Roça Grande Mine produced at a rate of approximately 200 tpd in 2017. The Pilar Mine produced at a rate of approximately 1,000 tpd in 2017.

SOURCES OF INFORMATION

Site visits to the Roça Grande and Pilar mines were carried out by Mr. Reno Pressacco, P. Geo., RPA Principal Geologist, and Mr. Jeff Sepp, P. Eng., RPA Senior Mining Engineer, on December 14, 2017 and December 13, 2017, respectively. Messrs. Pressacco and Sepp were accompanied by Mr. Jon Hill, Exploration & Geology Expert Advisor, and by Mr. Helbert Taylor Vieira, Resources and Reserves Manager, of Jaguar. RPA had previously visited the two mines in November 2014.

A summary of the Jaguar staff and its consultants other than the named authors of this Technical Report who contributed to the preparation of the Mineral Resource and Mineral Reserve estimates for the Pilar and Roça Grande mines is presented below.

Name	Position	Company	Mine/Project
Bob Gill	Vice President, Operations	Jaguar	Corporate
Jonathan Victor Hill	Geology & Exploration Expert Advisor	Jaguar	Corporate
Jean-Marc Lopez	Technical Advisor to the Board	Jaguar	Corporate
Helbert Taylor	Resources and Reserves Manager	Jaguar	Corporate
Armando José Massucatto	Exploration Manager	Jaguar	Corporate
Eric Alexandre Duarte Ferreira	Mine Manager	Jaguar	Pilar
Elias de Oliveira Andrade	Geology Manager	Jaguar	Pilar
Hugo Leonardo de Avila Gomes	Resource Geologist	Jaguar	Pilar
Tiago Pedro de Souza	Mine Geologist	Jaguar	Pilar
Aloma Cruz Tente	Mine Geologist	Jaguar	Pilar
André Moura de Alcântara	Mine Geologist / Geotechnical	Jaguar	Pilar
Fabricio Gonçalves Barcelos	Geology Technician	Jaguar	Pilar
Igor Savaiva	Mining Engineer	Jaguar	Pilar
Edson Cassemiro	Plant Manager	Jaguar	Roça Grande
Rogério de Lima Lopes	Operation Manager	Jaguar	Roça Grande
Francisco Bittencourt Oliveira	Mine Planning Specialist	MCB	Consultant

Messrs. Pressacco and Sepp are the Qualified Persons taking responsibility for this Technical Report. A summary of the individual contributions of each of the authors to this report is provided in Section 29 Certificates of Qualified Persons.

The documentation reviewed, and other sources of information, are listed at the end of this report in Section 27 References.

LIST OF ABBREVIATIONS

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

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

3 RELIANCE ON OTHER EXPERTS

This report has been prepared by RPA for Jaguar. The information, conclusions, opinions, and estimates contained herein are based on:

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

For the purpose of this report, RPA has relied on ownership information provided by Jaguar. RPA has not researched property title or mineral rights for the Roça Grande and Pilar mining operations and expresses no opinion as to the ownership status of the property.

RPA has relied on Jaguar for guidance on applicable taxes, royalties, and other government levies or interests, applicable to revenue or income from the Roça Grande and Pilar mining operations.

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

4 PROPERTY DESCRIPTION AND LOCATION

The Roça Grande and Pilar mines form the Caeté Mining Complex, located to the east of Belo Horizonte, the capital city of the state of Minas Gerais (Figures 4-1 and 4-2). Both mines share the same milling complex and are reported together in this Technical Report. The processing plant is located at the Roça Grande Mine. The Roça Grande and Pilar mines are located in the municipalities of Caeté and Santa Bárbara, respectively, in the state of Minas Gerais, Brazil. Caeté (35,000 inhabitants) and Santa Bárbara (30,000 inhabitants) are comparably sized towns, located 55 km and 110 km, respectively, from Belo Horizonte. The two towns have good urban infrastructure, including banks, hospitals, schools, and commercial businesses.

From Caeté, the main access to the plant site and to the Roça Grande Mine is by a seven kilometre public dirt road that links Caeté to the town of Barão de Cocais. The Roça Grande Mine has geographic coordinates of 19°57' S latitude and 43°38' W longitude.

The Pilar ore is transported to the plant by trucks using paved and dirt public roads totalling 45 km. The Pilar Mine has geographic coordinates of 19°58'4.43" S latitude and 43°28' 25.70" W longitude.

Belo Horizonte is the capital and also the largest city of the state, with a population in excess of four million. It is the major centre for the Brazilian mining industry. A large commercial airport with domestic and international flights services Belo Horizonte, which hosts several state and federal government agencies and private businesses that provide services to the mining industry.

Jaguar maintains a corporate office in Belo Horizonte.

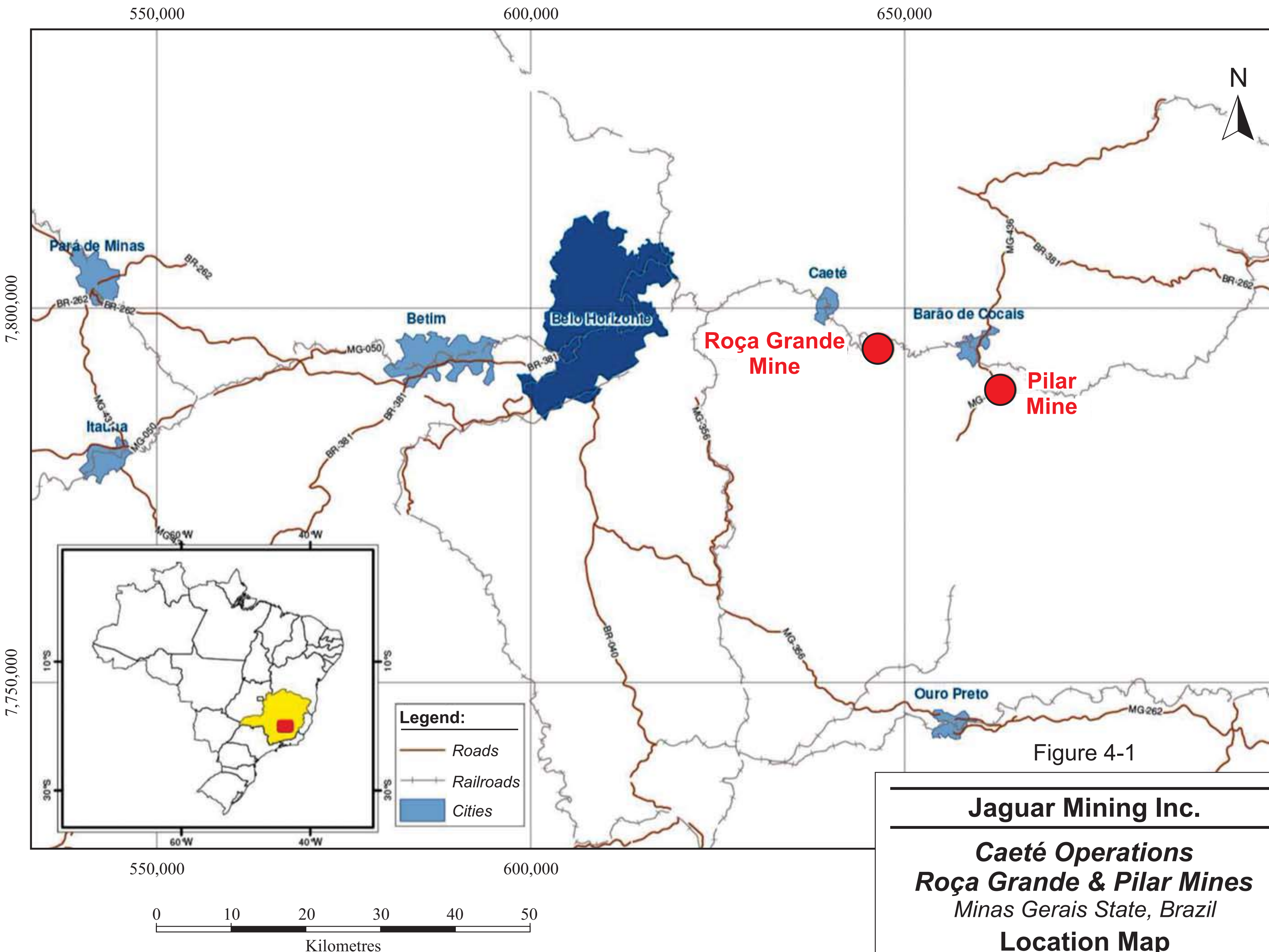

Figure 4-1

Jaguar Mining Inc.

Caeté Operations
Roça Grande & Pilar Mines
Minas Gerais State, Brazil

Location Map

April 2018

Source: Jaguar Mining Inc., 2013.

RPA

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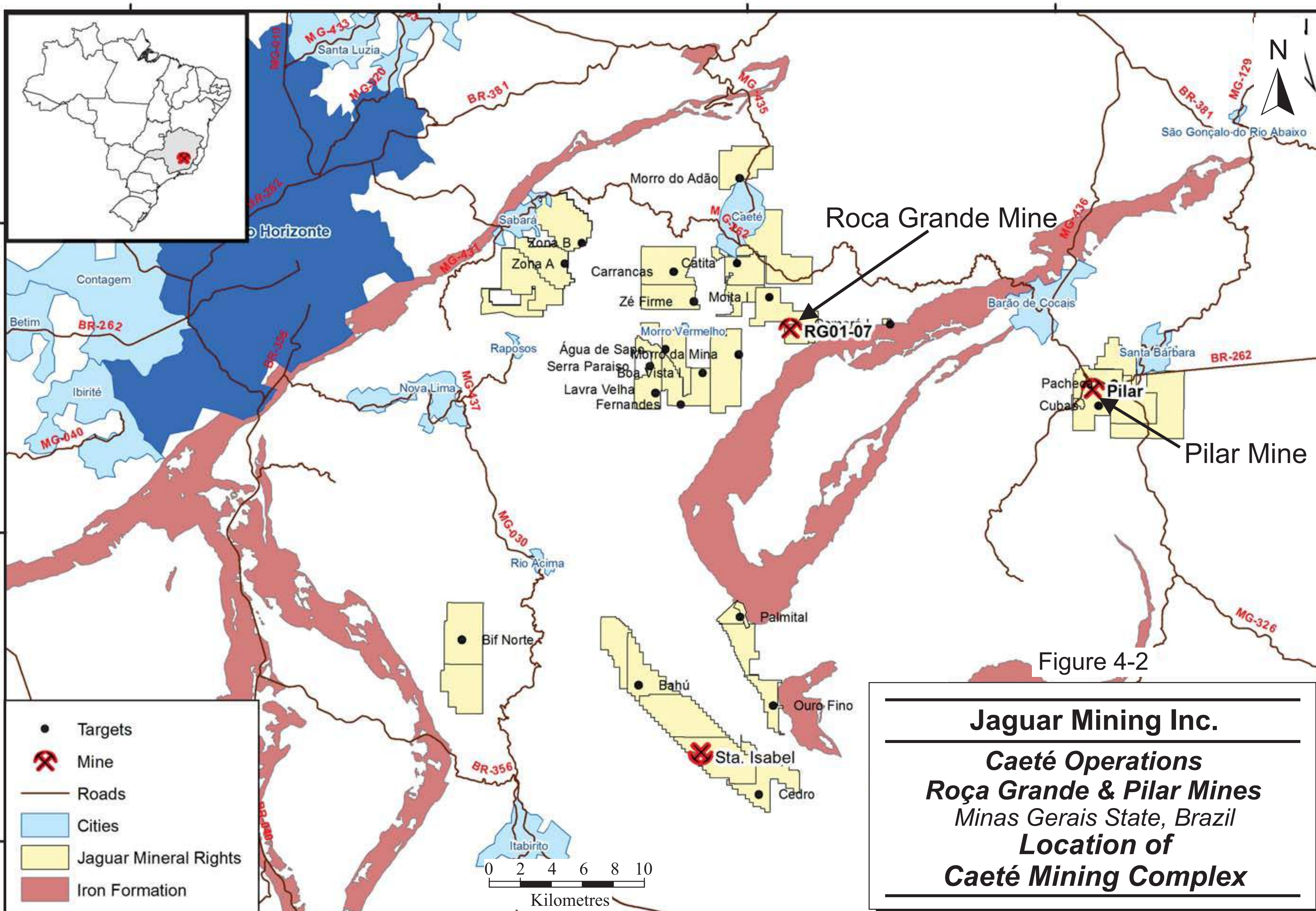

Figure 4-2

Jaguar Mining Inc.

Caeté Operations
Roça Grande & Pilar Mines
Minas Gerais State, Brazil
Location of
Caeté Mining Complex

April 2018

Source: Jaguar Mining Inc., 2016.

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MINERAL TENURE AND SURFACE RIGHTS

The land tenure package for the Caeté Operations comprises 23 mining leases and exploration concessions granted by the National Department of Mineral Production (DNPM), and four surface rights holdings (Figures 4-3 and 4-4). The mining leases and exploration concessions cover an area totalling 14,199.52 ha (Table 4-1). The surface rights holdings comprise nine separate agreements that cover a total area of 751.17 ha (Table 4-2).

TABLE 4-1 SUMMARY OF MINERAL RIGHTS HOLDINGS
Jaguar Mining Inc. – Caeté Operations

DNPM Tenement	Target	Area (ha)	Licence No.	Licence Published in	Licence Renewal Date	DNPM Status
			Pilar:			
830.187/2004	Cubas	600	3867	05/05/2004	05/03/2007	Exploration Licence Renewal Application
830.463/1983	Pilar	961.66	206	17/08/2005		Mining Concession
831.878/2013	Pilarzinho	35.33	13494	29/10/2015	28/08/2018	Exploration Licence
830.402/2016	Pilar	1,237.98	2578	17/03/2016	16/01/2019	Exploration Licence
831.233/2017	Pilar	1,227.97				Exploration Application
Sub-total, Pilar		**4,062.94**				
			Caeté Complex:			
807.482/1976	Boa Vista	675.18	322	21/10/2009		Mining Concession
830.037/2015	Camará 1	8.15				Mining Concession Application
830.038/2015	Camará 1	12.72				Mining Concession Application
830.935/1979	Morro do Adão	728.38	933	19/07/1990		Mining Concession Application
830.938/1979	Catita	521.7	264	03/09/2009		Mining Concession
830.940/1979	Juca Vieira	285.32	246	22/07/1993		Mining Concession
831.056/2010	RG 3	706.03				Mining Concession Application
831.057/2010	RG 1,2,5,6 and 7	193.08	105	28/03/1996		Mining Concession Application
831.371/2003	Zé Firme	583.42	1433	05/06/2008		Exploration Licence Renewal (Positive Final report filed)
831.817/2003	Moita W	1,583.69	8078	06/12/2016		Exploration Licence Renewal Application
832.152/2002	Serra Paraíso	600.24	8782	26/04/2006		Mining Concession Application
834.126/2007	Carrancas	808.95	127	19/03/2013		Exploration Licence Renewal
834.409/2007	Água de Sapo	550.61	147	19/03/2013		Exploration Licence Renewal
430.001/1935	Zona A	1,000.01	229	24/07/1996		Mining Concession
430.002/1935	Zona B	654.41	236	25/07/1996		Mining Concession
831.282/2002	Arr.Velho	884.7	6047	12/05/2006		Exploration Licence Renewal (Positive Final report filed)
832.230/2003	Piçarrão/Faz Cristais	339.99	9512	06/12/2016		Exploration Licence Renewal Application
830.807/2017	Morro da Mina	1.00				Mining Concession Application
Sub-total, Caeté		**10,136.58**				
Total, Pilar & Caeté		**14,199.52**				

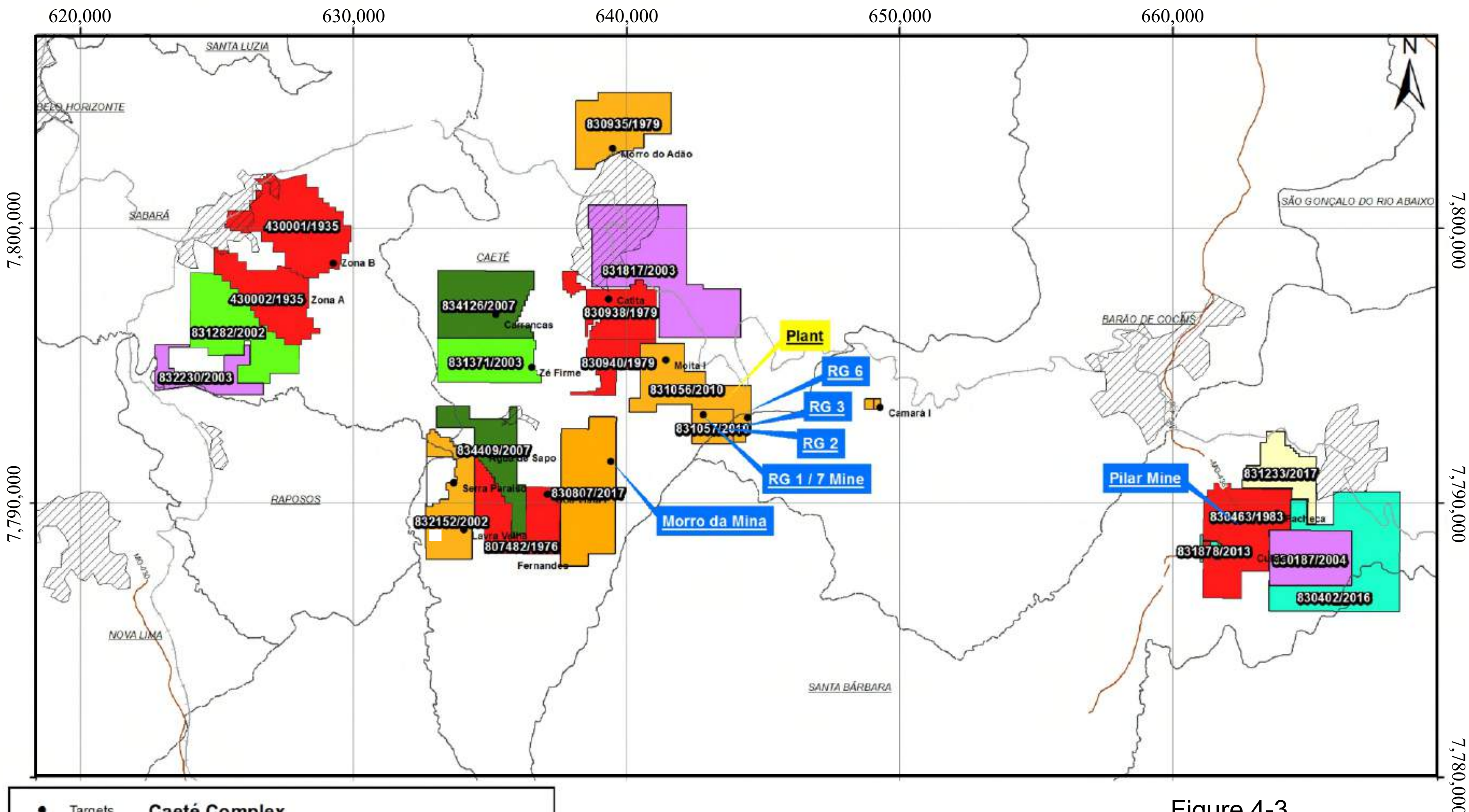
TABLE 4-2 SUMMARY OF SURFACE RIGHTS HOLDINGS
Jaguar Mining Inc. – Caeté Operations

Fazenda	Area (ha)	Registry No.	Orebody or Utility		20% Area Forest Legal Reserve
Velha/Navantinho Peixoto	140.00	Pending	Moita II	Inactive	Legal reserve area of 28.52 ha
Trindade	184.78	2920	Camará II	Inactive	Legal reserve area of 71.43 ha
Roça Grande	41.65	13171	Moita I Dam	Inactive	Legal reserve area of 9.23 ha
Roça Grande	177.71	13172	RG01, RG07 and RG05	Active	Not Available
Gongo Soco	64.00	8854	RG02, RG03 and RG06	Active	Not Available
Serra Luis Soares	9.38	13170	Processing Plant	Active	Not Available
Serra Luis Soares	99.47	12734	RG02W, Processing Plant and Waste Dump	Active	Not Available
Santa Rita	23.55	11379	Catita I	Inactive	The legal reserve area of 4,29 ha
Serra Luis Soares/Saint Gobain	10.63	17033	Mechanic Workshop	Active	Not Available
Total	**751.17**				

Mining leases are renewable annually and have no set expiry date. Each year Jaguar is required to provide information to DNPM summarizing mine production statistics. Exploration concessions are granted for a period of three years. Once a company has applied for an exploration concession, the applicant holds a priority right to the concession area as long as there is no previous ownership. The owner of the concession can apply to have the exploration concession renewed for one-time extension for a period of two or three years. Renewal is at the sole discretion of DNPM. Granted exploration concessions are published in the Official Gazette of the Republic (OGR), which lists individual concessions and their change in status. The exploration concession grants the owner the sub-surface mineral rights. Surface rights can be applied for if the land is not owned by a third party.

The owner of an exploration concession is guaranteed, by law, access to perform exploration field work, provided adequate compensation is paid to third party landowners and the owner accepts all environmental liabilities resulting from the exploration work. The exploration permits are subject to annual fees based on its size.

The location of the mineralized wireframes in relation to the property boundaries for the Roça Grande Mine and the Pilar Mine are shown in Figures 4-5 and 4-6, respectively.



Targets
Roads
Railroads
Municipality
Urban Area

Caeté Complex

Mineral Rights - Status

Exploration License
Exploration License Renewal
Exploration License Renewal (Positive Final report filed)
Exploration License Renewal Application
Mining Concession Application
Mining Concession
Exploration Application

UNIVERSAL TRANSVERSE MERCATOR PROJECTION - UTM
CENTRAL MERIDIAN: 45° WGR
ZONE: 23S
VERTICAL DATUM: LOCAL
HORIZONTAL DATUM: SIRGAS2000

0 2.5 5 7.5 10
Kilometres

Figure 4-3

Jaguar Mining Inc.

Caeté Operations
Roça Grande & Pilar Mines
Minas Gerais State, Brazil
Mineral Rights Distribution, Caeté Operations

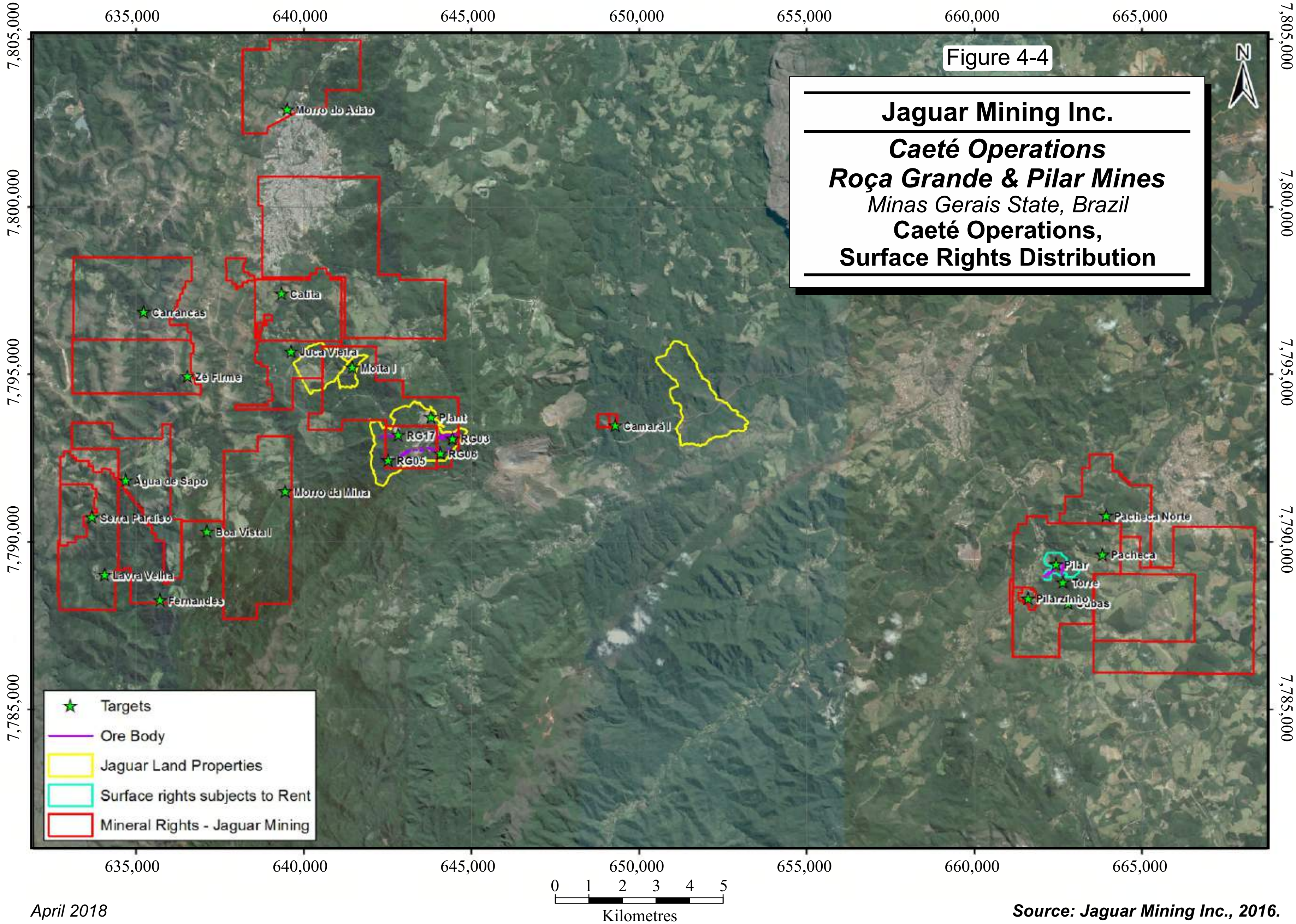
April 2018

Source: Jaguar Mining Inc, 2016.

Figure 4-4

Jaguar Mining Inc.

Caeté Operations
Roça Grande & Pilar Mines
Minas Gerais State, Brazil
Caeté Operations,
Surface Rights Distribution



April 2018

Source: Jaguar Mining Inc., 2016.

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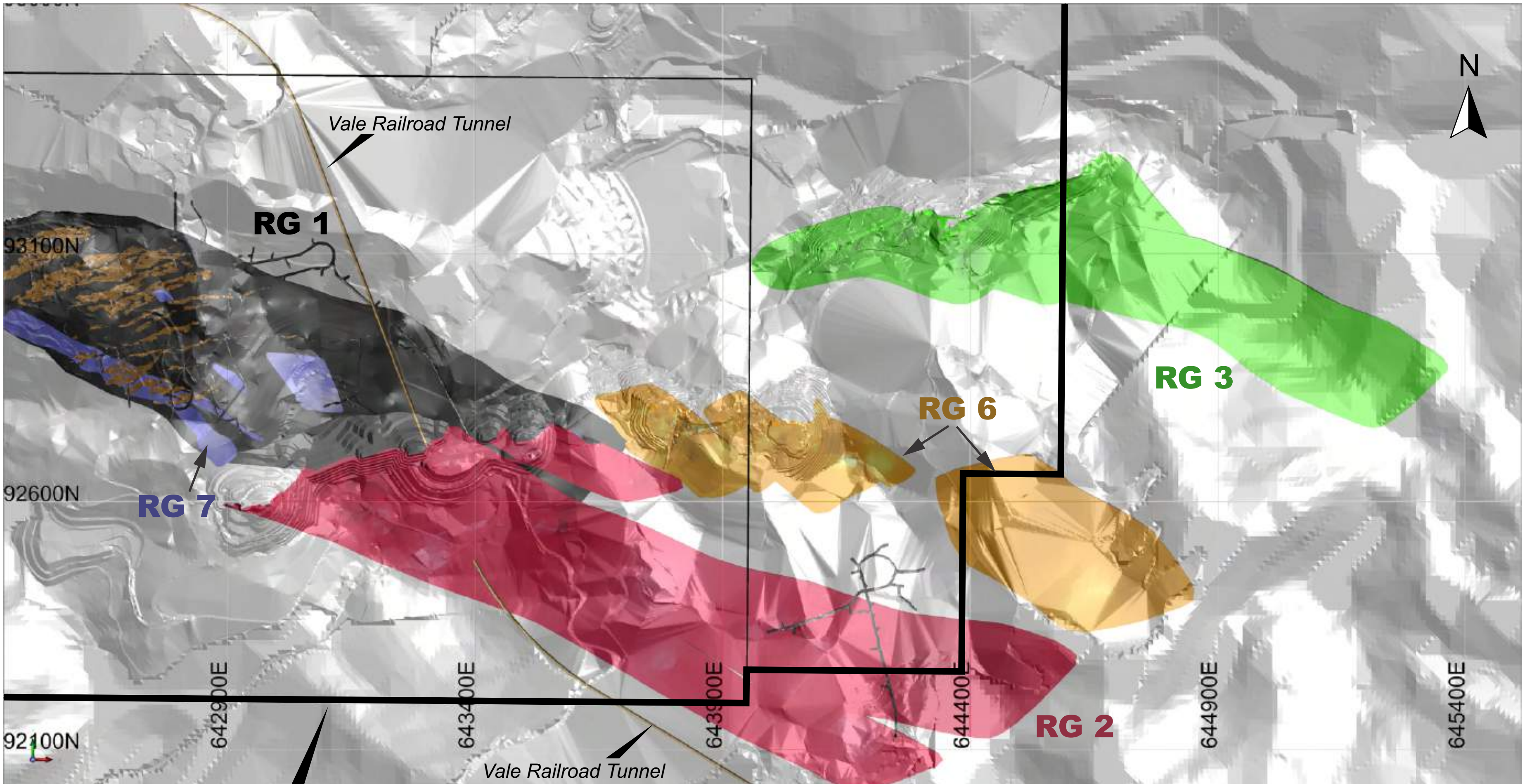

Roça Grande Property Boundary

0 100 200 300 400 500
Metres

Figure 4-5

Jaguar Mining Inc.

Caetê Operations
Roça Grande Mine
Minas Gerais State, Brazil
Location of Mineralized Wireframes, Roça Grande Mine

April 2018

Source: RPA, 2016.

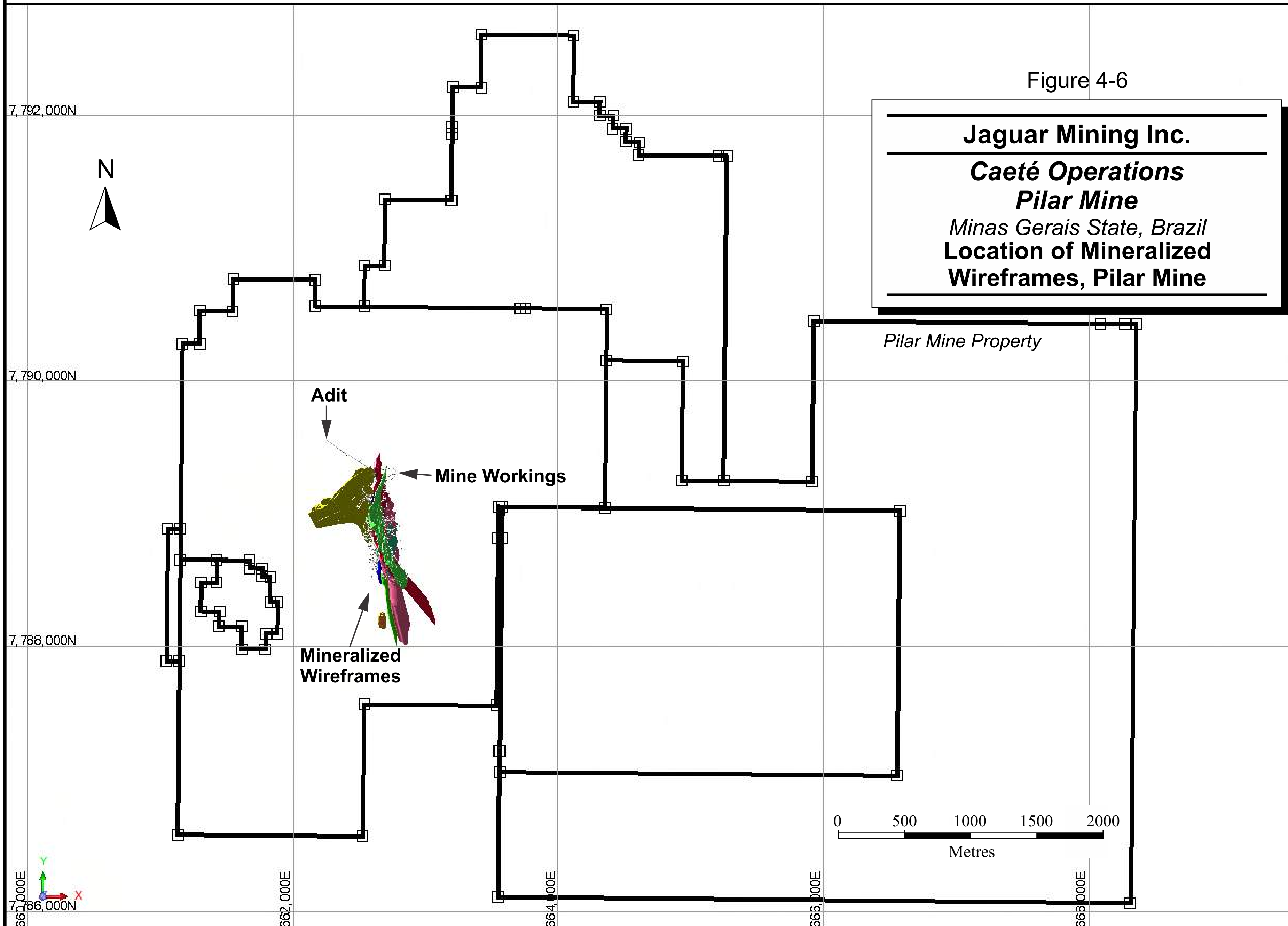

Figure 4-6

Jaguar Mining Inc.

Caeté Operations
Pilar Mine

Minas Gerais State, Brazil

Location of Mineralized Wireframes, Pilar Mine

April 2018

Source: RPA, 2016.

RPA

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ROYALTIES AND OTHER ENCUMBRANCES

Jaguar must pay a royalty equivalent to 1% of net sales to DNPM. In addition, one royalty payment and three lump sum annual rental payments are associated with the Caeté Operations (Table 4-3).

TABLE 4-3 SUMMARY OF ROYALTIES AND RENTS, 2017
Jaguar Mining Inc. – Caeté Operations

Owner	Royalty	Orebody or Utility	Payments (BRL)
Royalties:			
Carlos Marcelani	0.5% of Production Gross Profits (Concession 830.463/1983)	Pilar office, Mechanic Shop, BA, BF, BFII and SW orebodies	495,234

RPA is not aware of any environmental liabilities on the property. Jaguar has all required permits to conduct the proposed work on the property. RPA is not aware of any other significant factors and risks that may affect access, title, or the right or ability to perform the proposed work program on the property.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

ACCESSIBILITY

The Roça Grande and Pilar properties can be accessed via the federal highway BR 381 and state paved roads. The distance from Belo Horizonte to the town of Caeté is 110 km along paved roads and eight kilometres from Caeté to the Roça Grande Mine site by dirt road. Access to the Pilar Mine is provided by a paved highway from both Belo Horizonte (93 km) and Santa Bárbara (seven kilometres). A partially paved, 45 km secondary road is used to transport Pilar run-of-mine (ROM) ore to the processing plant that is located at the Roça Grande Mine.

CLIMATE

The Caeté Mining Complex lies approximately 1,000 MASL. The terrain in the area is rugged in many places, with numerous rolling hills incised by deep gullies along drainage channels. The relief in the area is approximately 400 m. Farming and ranching activities are carried out in approximately 50% of the region.

Annual rainfall in area of the Roça Grande and Pilar mines averages between 1,300 mm and 2,300 mm, 84% of which falls during the rainy season between October and March. Most of the precipitation falls in the months of December and January. The surface winds have a generally low average speed (less than one metre per second), and are predominantly from the south and southeast.

The annual average temperature is slightly above 20ºC. Air humidity does not exceed 90%, even during the summer months. The annual average evaporation is approximately 934 mm. The climate is suitable for year-round operations.

LOCAL RESOURCES

Belo Horizonte is one of the world's mining capitals with a regional population in the range of four million people. Automobile manufacturing and mining services dominate the economy. General Electric has a major locomotive plant which produces engines for all of South America and Africa. Mining activities in Belo Horizonte and the surrounding area have been carried out in a relatively consistent manner for over 300 years.

This mining region has historically produced significant quantities of gold and iron from open pit and large-scale underground mining operations operated by AngloGold Ashanti, VALE, Companhia Siderúrgica Nacional (CSN), and Eldorado Gold Corp. Belo Horizonte is a well-developed urban metropolis and has substantial infrastructure including two airports, an extensive network of paved highways, a fully developed and reliable power grid, and ready access to process and potable water.

Caeté is a town of approximately 35,000 people. The town has good urban infrastructure, including banks, hospitals, schools, and commercial businesses. The local economy is based on agriculture and iron mining. Manpower, energy, and water are readily available. The mine is supplied by electric power from the Brazilian national grid, but back-up generator power is also available at the mine site.

INFRASTRUCTURE

The Caeté Mining Complex includes a nominal 2,050 tpd processing plant with separate tailings disposal areas for both fine flotation tailings and CIP tailings. Electrical power supply is provided through the national power grid. The process plant is located at the Roça Grande Mine at an elevation of approximately 1,250 MASL.

An administration complex is located at the entrance to the plant site, with such ancillary buildings as offices, conference rooms, cafeteria, maintenance shops, compressors (mine and mill), a dry, a first aid station, warehouse, backfill preparation, and a water treatment plant, which is located near the process plant. The assay laboratory and process testing laboratory are also located near the process plant. The Roça Grande Mine is accessed by an adit that is located approximately 800 m to the southwest of the plant at an elevation of approximately 1,100 MASL. Trailers located at the mine adit provide local storage and office space. The explosives and blasting accessories warehouses are located 3.5 km away from the mine area, in compliance with the regulations set forth by the Brazilian Army.

The surface infrastructure at the Pilar Mine is limited to shops, offices, cafeteria, first aid, and warehouse facilities. The mine is accessed by an adit that is located at an elevation of approximately 750 MASL.

A railroad tunnel measuring approximately seven metres wide by six metres high traverses the Roça Grande Mine area at approximately 1,050 MASL. The tunnel is owned and operated by Vale and intersects the mineralized wireframe of the RG02 lens at an elevation of approximately 1,055 MASL.

RPA noted that the Pilar Mine and the Caeté Mining Complex were well run and organized, provided a safe environment for the mine workforce, and had well-maintained maintenance and equipment facilities. The facilities are of a size and quality capable of supporting the forecasted production rates.

6 HISTORY

PRIOR OWNERSHIP

In December 2003, Jaguar acquired the Santa Bárbara property, which includes the Pilar mineral concessions, from Vale. In November 2005, Jaguar entered into a mutual exploration and option agreement with Vale with respect to six concessions, known as the Roça Grande concessions, located on 9,500 acres of highly prospective gold properties along 25 km of a key geological trend in the Iron Quadrangle. The contract between Jaguar and Vale provided Jaguar with the exclusive right over a 28 month period beginning November 28, 2005 to explore and conduct feasibility studies and to acquire gold mining rights in the Vale properties if the studies supported economical mining operations. The contract granted corresponding rights for Vale to explore the Jaguar property for iron and acquire mineral rights in the property during a three-year period. In November 2007, Jaguar notified Vale of its intent to exercise the option to acquire all six Roça Grande concessions. The final transfers of the Roça Grande concessions to Jaguar were concluded in December 2010 and August 2011 (Jaguar 2015b). In November 2014, four of the six Roça Grande concessions acquired from Vale were returned to Vale by amending the original contract.

EXPLORATION AND DEVELOPMENT HISTORY

Initial exploration activities carried out by Vale in the Roça Grande Mine area consisted of regional geological, geochemical and geophysical surveys, along with excavation of a number of exploration trenches and diamond drilling to evaluate the gold mineralization found in the area. In total, 4,746 stream sediment samples were collected and 4,350 m of trenches were excavated during the 1973 to 1993 period.

Vale carried out geological mapping, geological interpretation, and exploration and in-fill drilling at the Pilar deposit. Eldorado Gold Corp. executed a small drilling campaign to evaluate the deposit from 2002 to 2003 (Machado, 2010).

Soil sampling programs have been carried out throughout the various claim blocks that comprise the CCA project. A summary of the soil samples collected by the various mining companies is presented in Table 6-1.

TABLE 6-1 CCA SOIL SAMPLES BY MINING COMPANY
Jaguar Mining Inc. – Caeté Operations

Company	Total
MMV (Anglo)	1,270
DOCEGEO (Vale)	7,899
WMC (Western Mining Co.)	2,674
Jaguar Mining	10,472
Grand Total	**22,315**

Jaguar initiated exploration activities at Pilar in 2006 and initially contemplated building a sulphide plant on site, however, the acquisition of the Roça Grande concessions created an opportunity to develop an expanded project, with greater plant capacity to receive ore from several mineral properties.

In 2007, Jaguar completed a scoping study of the Caeté Project, received the Implementation Licence, secured the power contract for the start-up, and commissioned TechnoMine to prepare a NI 43-101 technical report on the Caeté Project mineral resources, which was completed during the year.

In 2008, expansion plans at the Caeté Project continued as TechnoMine completed a feasibility study. By the end of the third quarter in 2008, all necessary permits and licences for the construction and commissioning phase of the Caeté Project had been received and Jaguar initiated civil works for the milling and treatment circuits.

In November 2008, due to the decline in gold prices, the financial markets and worldwide equity values, including the gold sector, Jaguar temporarily suspended development of the Caeté Project pending an assessment of market conditions and the availability of capital to move the project forward. Consistent with the decision to suspend the development of the Caeté Project, underground work at the Roça Grande Mine was temporarily suspended; however, development at the Pilar Mine continued.

In December 2008, Jaguar began transporting ore by truck from the Pilar Mine to the Paciência Plant to supplement the ore being supplied from Paciência's Santa Isabel Mine.

In March 2009, Jaguar completed an $86.3 million equity offering, the proceeds of which were primarily used to restart development and construction at Caeté. During 2009 and part of 2010, Jaguar focused on the implementation and construction of the Caeté Project.

The Caeté plant was commissioned in June 2010. The first gold pour was conducted in August 2010 and commercial production was declared in October 2010. Capital expenditures for the Caeté Project totalled US$127 million (Jaguar 2015b).

At the Roça Grande Mine, mining activities focussed on the RG01 deposit. The principal access to the mine is provided by an adit and ramp system that has been developed to the 925 m elevation, approximately 175 m below the elevation of the adit collar. A cross-cut to the south was begun from the 1,070 m elevation to provide access to the RG02 deposit but was abandoned when it encountered poor ground conditions (Figure 6-1).

The principal access to the Pilar Mine is provided by an adit and ramp system that has been developed to the 385 m elevation, approximately 400 m below the elevation of the adit collar (Figure 6-2). Mining activities are focussed on a number of separate zones, however, the bulk of the production is being derived from the BA, BF, and BF II zones. It is important to note that the previous naming system for the different mineralized zones has been updated as a result of the current work due to a better understanding of the controls on the gold distribution. A comparison of the new naming convention with the previous naming convention is presented in Table 6-2.

TABLE 6-2 COMPARISON OF NAMING CONVENTIONS AT THE PILAR MINE
Jaguar Mining Inc. – Caeté Operations

Previous Orebody Name	Revised Orebody Name
101-BA (111=FW, 112=HW)	101-BA (111=FW, 112=HW)
102-BF (121=FW, 122=HW)	102-BF (121=FW, 122=HW)
103-BF II (131=FW, 132=HW)	103-BF II (131=FW, 132=HW)
200-LFW	200-LFW
300-LPA	300-LPA
400-LHW	400-LHW
500-C	500-Torre
600-Southwest	600-Southwest
	700-LFW extension

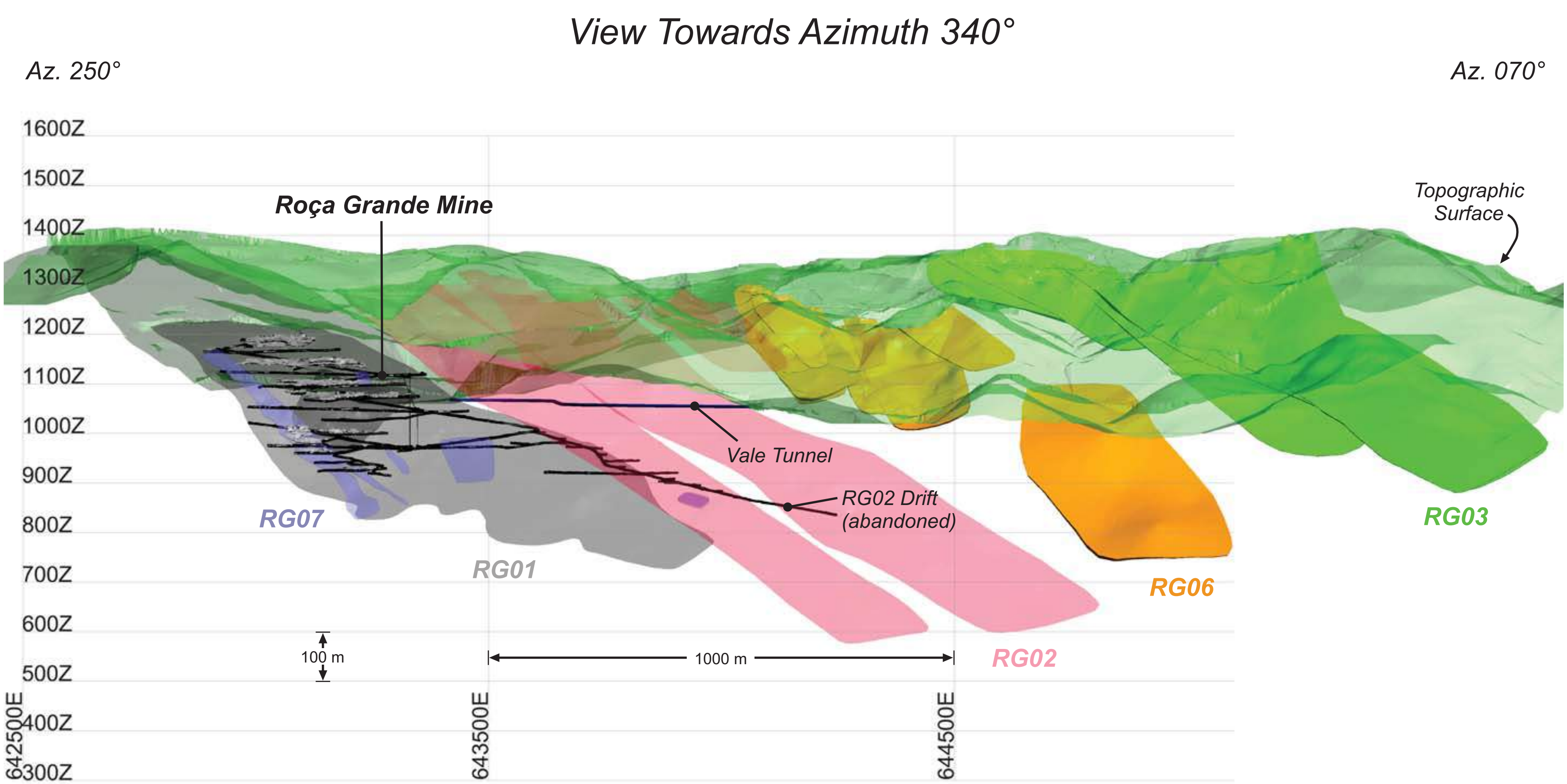


Figure 6-1

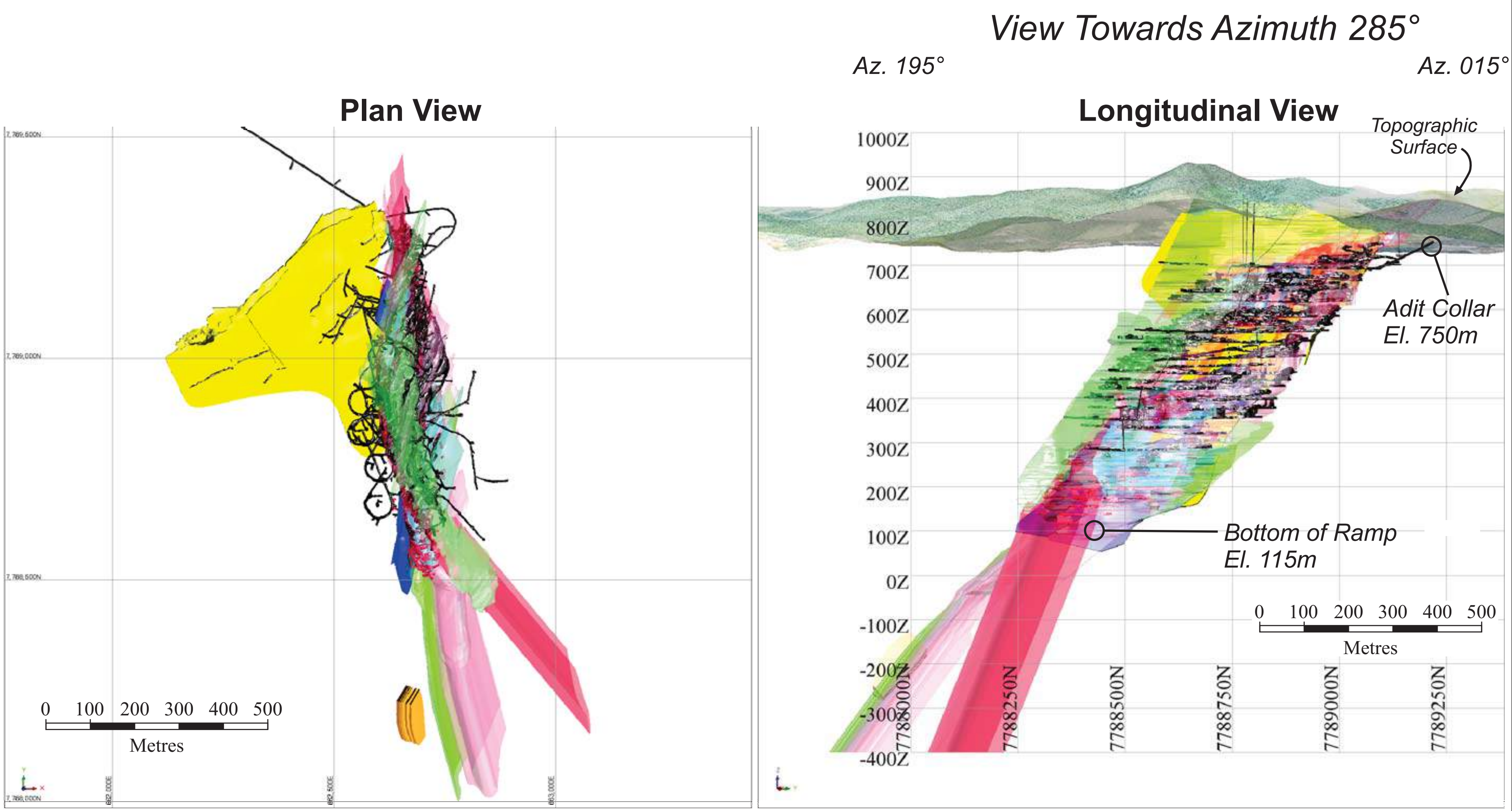
Jaguar Mining Inc.

Caeté Operations
Roça Grande Mine
Minas Gerais State, Brazil

Longitudinal View of the Roça Grande Mine

April 2018

Source: RPA, 2016.



April 2018

Source: RPA, 2018.

Figure 6-2

Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil

Longitudinal View of the Pilar Mine

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PAST PRODUCTION

A small amount of gold was produced by DOCEGEO from the Roça Grande deposits (RG02, 03, 04, 05 and 06) during the 1996 to 2000 period. In total, approximately 1.02 Mt of material at an average grade of 2.2 g/t Au was mined by open pit mining methods and processed by heap leaching. A total of approximately 66,800 oz of gold was recovered (Machado, 2010).

Since 2010, the Caeté Mining Complex has processed material from various local deposits including Roça Grande, Pilar, and Rio de Peixe. Since 2010, the Roça Grande Mine has recovered approximately 82,000 oz of gold.

Initial production from the Pilar Mine was processed at the Paciência Mining Complex during the 2008 to 2010 period. After 2010 the ore from the Pilar Mine was processed at the Caeté processing facility. Since 2008, the Pilar Mine has recovered approximately 300,000 oz of gold.

Production for the Caeté Mining Complex is summarized in Table 6-3.

TABLE 6-3 CAETÉ MINING COMPLEX PRODUCTION
Jaguar Mining Inc. – Caeté Operations

	Pilar Production		Roça Grande Production		Caeté Plant Production			
Year	Tonnes	g/t Au	Tonnes	g/t Au	Tonnes	g/t Au	Recovery	Ounces Produced
2008	7,000	5.43						
2009	163,000	4.39						
2010	291,000	3.73	58,000	2.48	290,000	2.71	76%	19,304
2011	453,000	3.55	204,000	2.35	674,000	2.90	87%	54,783
2012	426,000	3.36	208,000	3.30	627,000	2.98	88%	52,913
2013	450,000	3.23	156,000	2.81	613,000	2.95	88%	51,424
2014	391,000	2.85	172,000	2.39	596,000	2.57	90%	44,251
2015	308,000	3.32	159,000	2.29	469,000	2.92	90%	39,687
2016	296,000	3.35	89,000	2.16	380,000	3.02	90%	33,351
2017	335,000	3.80	69,000	2.51	406,000	3.27	90%	38,685
Total	**3,120,000**	**3.44**	**1,115,000**	**2.59**	**4,055,000**	**2.91**	**88%**	**334,000**

Note:
1. From 2008 to 2011, some of Pilar ore was processed at Paciência.
2. From 2010 to 2012, open pit oxide ore from Roça Grande was mined and processed.

7 GEOLOGICAL SETTING AND MINERALIZATION

REGIONAL GEOLOGY

The Roça Grande and Pilar deposits are located in the eastern part of the Iron Quadrangle, which had been the largest and most important mineral province in Brazil for centuries until the early 1980s, when the Carajás mineral province, in the state of Pará, attained equal status. Many commodities are mined in the Iron Quadrangle, the most important being gold, iron, manganese, bauxite, imperial topaz, and limestone. The Iron Quadrangle was the principal region for the Brazilian hard rock gold mining until 1983 and accounted for approximately 40% of Brazil's total gold production. Gold was produced from numerous deposits, primarily in the northern and southeastern parts of the Iron Quadrangle, most hosted by Archean or Early Proterozoic banded iron formations (BIF) contained within greenstone belt supracrustal sequences.

In the Brumal region, outcrops belonging to the granitic gneiss basement of the Nova Lima and Quebra subgroups of the Rio das Velhas Supergroup occur. The granitic gneiss basement is comprised of leucocratic and homogeneous gneisses and migmatites, making up a complex of an initial tonalitic composition intruded by Archean-aged rocks of granitic composition. The upper contact of the sequence is discordant and tectonically induced by reverse faulting. The Rio das Velhas Supergroup is regionally represented by schists of the Nova Lima Group and meta-ultramafic rocks of the Quebra Group including serpentinites, talc schists, and metabasalts (Figure 7-1). The rocks of the Nova Lima Group have been folded and sheared along a northeast-southwest regional trend.

Iron formations occur as the only metasediments in layers with thicknesses up to 10 m. The Nova Lima Group can be subdivided into two units: a unit consisting of talc chlorites and intercalations of iron formation, fuchsite schist, quartz sericite schist, and carbonaceous phyllite; and a unit hosting sulphidized gold bearing iron formation and quartz sericite schists.

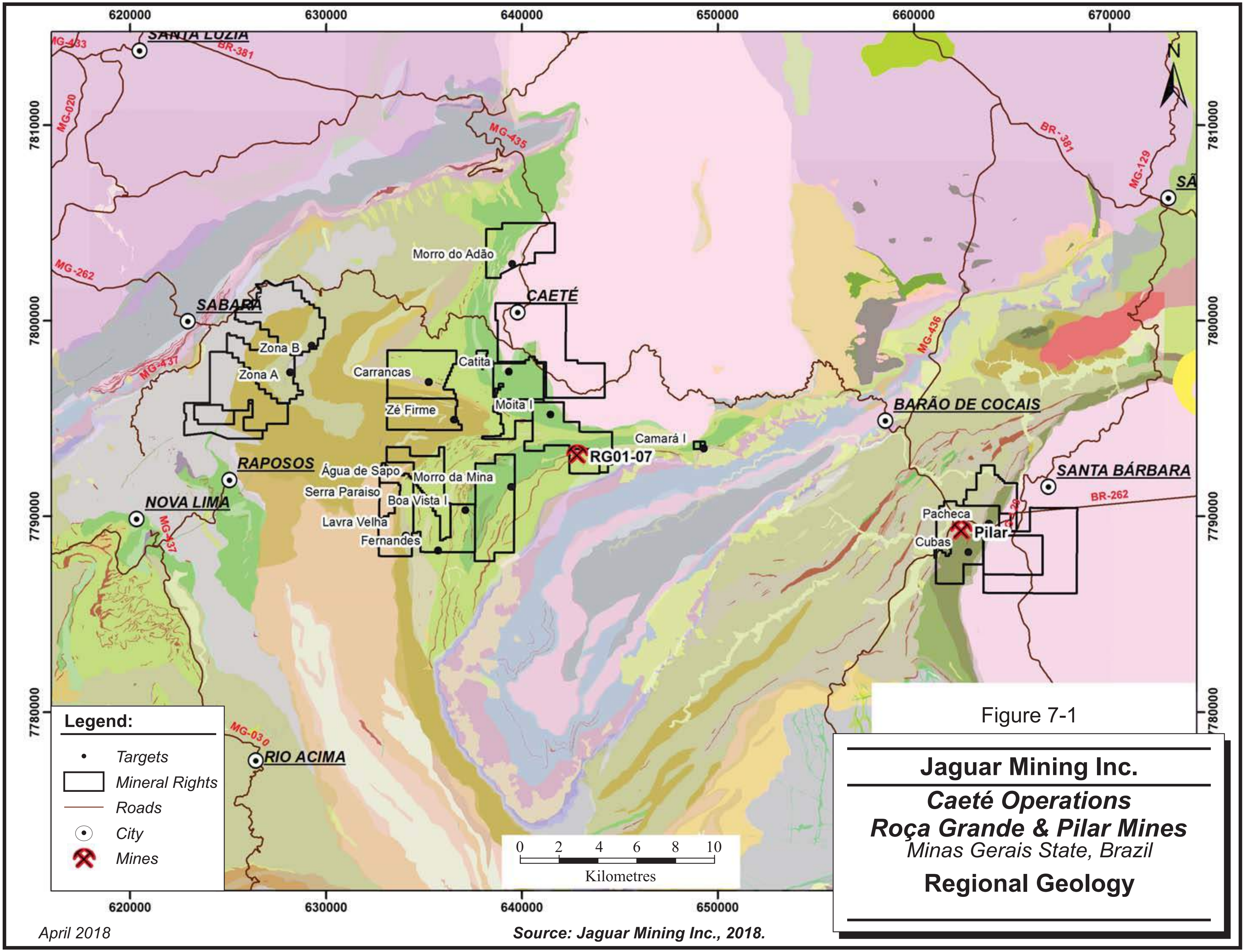

Figure 7-1

Jaguar Mining Inc.

Caeté Operations
Roça Grande & Pilar Mines
Minas Gerais State, Brazil

Regional Geology

FANEROZÓICO
CENOZÓICO

NEOGENO

Pleistoceno-Holoceno

N34al — Aluvião: areia e cascalho

N34co — Depósitos coluviais: Blocos, matacões e seixos de quartzito, itabirito e canga em solo aluvial

Plioceno-Pleistoceno

N23ca — Canga: fragmentos de rocha cimentados por limonita

N23co — Depósitos coluviais: Blocos, matacoes e seixos de quartzito, itabirito e canga em solo aluvial

PALEOGENO

Eoceno-Oligoceno

E23sl — Sedimento lacustre: argilito, arenito e linhito

PALEOGENO

Eca — Canga: fragmentos de rocha cimentados por limonita

PROTEROZÓICO
PALEOPROTEROZÓICO

RIACIANO

GRUPO ITACOLOMI

PP2i — Indiviso - Quartzito com lentes de conglomerado e filito

PP2isa — Formação Santo Antônio - Filito, quartzito, conglomerado e dolomito. Lentes de rocha rica em ferro ou formação ferrífera

PROTEROZÓICO
PALEOPROTEROZÓICO

SUPERGRUPO MINAS

RIACIANO

GRUPO SABARÁ

PP2ms — Indiviso - Clorita-sericita xisto, quartzito sericítico, quartzito feldspático e metagrauvaca

SIDERIANO

GRUPO PIRACICABA

PP1mp — Indiviso - Filito, quartzito, quartzito ferruginoso e quartzo-sericita xisto

PP1mpb — Formação Barreiro - Grafita xisto, mica xisto e filito

PP1mpf — Formação Fêcho do Funil - Filito, filito dolomítico, dolomito; quartzito e formação ferrífera subordinados

PP1mpc — Formação Cercadinho - Quartzito ferruginoso, quartzito, grit, quartzo sericita xisto, filito, sericita xisto, talco xisto e grafita xisto

GRUPO ITABIRA

PP1mi — Indiviso - Itabirito, itabirito filítico e dolomítico; hematita compacta e friável de alto teor (h)

PP1mig — Formação Gandarela - Dolomito, itabirito dolomítico, calcário e filito. Itabirito (it)

PP1mic — Formação Cauê - Itabirito e itabirito dolomítico, com lentes de dolomito. Hematita compacta e friável (h)

GRUPO CARAÇA

PP1mc — Indiviso - Quartzito fino, quartzito filítico, filito e conglomerado

PP1mcb — Formação Batatal - Filito sericítico, filito carbonoso, lente de quartzito fino e de formação ferrífera

PP1mcm — Formação Moeda - Quartzito cinza, grit e conglomerado, quartzo-sericita xisto com lentes de filito intercaladas; quartzito filítico, quartzo-mica xisto e conglomerado

ARQUEANO
MESOARQUEANO - NEOARQUEANO

SUPERGRUPO RIO DAS VELHAS

NEOARQUEANO

GRUPO MAQUINÉ

FORMAÇÃO CASA FORTE

A4rmcc — Unidade Capanema - Sericita xisto e sericita-quartzo xisto fino. (Associação de Litofácies Não-Marinha: metassedimentos aluvial-fluviais)

A4rmce — Unidade Córrego do Engenho - Quartzito sericítico de granulação média a fina e quartzito conglomerático subordinado. (Associação de Litofácies Não-Marinha: metassedimentos aluvial-fluviais)

A4rmcj — Unidade Jaguara - Quartzito sericítico de granulação média a grossa e grit; metaconglomerado polimítico e quartzo-mica xisto subordinado. Estratificação gradacional e cruzada acanalada e tangencial preservadas. (Associação de Litofácies Não-Marinha: metassedimentos aluvial-fluviais)

A4rmcdc — Unidade Chica Dona, Fácies Córrego da Cidreira - Metaparaconglomerado polimítico e quartzito (Associação de Litofácies Não-Marinha: metassedimentos aluvial-fluviais)

A4rmcdv — Unidade Chica Dona, Fácies Córrego do Viana - Metaconglomerado polimítico e quartzito sericítico fino com estratificação gradacional e cruzada acanalada e tangencial; Quartzo mica xisto subordinado. Conglomerado polimítico (cg). (Associação de Litofácies Não-Marinha: metassedimentos aluvial-fluviais)

FORMAÇÃO PALMITAL

A4rmprp — Unidade Rio de Pedras - Quartzito sericítico fino e quartzo-sericita xisto com estratificação cruzada de pequeno a médio porte; xisto carbonoso subordinado. Quartzito sericítico (qts). (Associação de Litofácies Ressedimentada: metaturbiditos proximais)

GRUPO NOVA LIMA

A4mcp — Unidade Córrego da Paina - Quartzo-mica-clorita xisto, clorita xisto, biotita-mica xisto feldspático; formação ferrífera local. (Associação de Litofácies Ressedimentada: metaturbiditos distais)

A4mfv — Unidade Fazenda Velha - Clorita-quartzo xisto feldspático, biotita-sericita-clorita xisto feldspático, biotita-moscovita xisto, rocha calcissilicática e metargilito carbonoso (metapsamitos e metapelitos com estratificação gradacional e cruzada de pequeno porte). (Associação de Litofácies Ressedimentada: metapsamitos e metapelitos com estratificação gradacional e cruzada de pequeno porte)

A4mcm — Unidade Catarina Mendes - Carbonato-quartzo-feldspato-biotita-clorita xisto, sericita-biotita-clorita-quartzo xisto, quartzo-clorita xisto, rocha calcissilicática, metaconglomerado e fm. ferrífera. Formação ferrífera (ff). Granada-estaurolita xisto em auréolas de metamorfismo de contato (ge). (Associação de Litofácies Ressedimentada: metagrauvaca com estratificação cíclica e gradacional e estratificação plano-paralela e cruzada)

A4mcs — Unidade Córrego do Sítio - Quartzo-carbonato-mica-clorita xisto, quartzo-mica xisto, filito carbonoso; formação ferrífera subordinada. Formação ferrífera (ff). Sericita-quartzo xisto (sq). (Associação de Litofácies Ressedimentada: metapelitos e metapsamitos com estratificação gradacional e cruzada)

A4mm — Unidade Mindá - Plagioclásio-clorita-mica-quartzo xisto, sericita-quartzo xisto, quartzo-clorita-mica xisto; xisto carbonoso e formação ferrífera subordinados. (Associação de Litofácies Ressedimentada: metapsamitos e metapelitos com estratificação gradacional preservada)

MESOARQUEANO

A3msq — Unidade Santa Quitéria - Mica-quartzo xisto, clorita-quartzo xisto, sericita-clorita xisto, xisto carbonoso, formação ferrífera e metachert. Formação ferrífera (ff). (Associação de Litofácies Sedimentar Clasto-química)

A3mmv — Unidade Morro Vermelho - Metabasalto toleiítico e komatiítico, formação ferrífera e metachert; xisto epiclástico e metavulcânica félsica subordinada. Formação ferrífera (ff). (Associação de Litofácies Vulcanossedimentar-química)

A3mof — Unidade Ouro Fino - Metabasalto toleiítico e komatiítico, metaperidotito e metatufo básico; metavulcânica ácida, metachert, formação ferrífera e xisto carbonoso subordinado. Formação ferrífera (ff). (Associação de Litofácies Vulcânica Máfica-Ultramáfica)

MESOARQUEANO

COMPLEXO BAÇÃO

A3b — Migmatitos, gnaisses e granitos

ROCHAS ÍGNEAS DE IDADE INCERTA

d — Diques de diabásio

Convenções geológicas

- 53 Direção e mergulho das camadas
- 12 Acamamento com foliação sub-paralela
- 35 Direção e mergulho de camadas invertidas
- 64 Acamamento invertido com foliação sub-paralela
- 25 Acamamento ou Bandamento composicional com mergulho medido
- Direção de camadas verticais
- Direção de xistosidade vertical
- 20 Direção e mergulho de foliação
- 43 Foliação com mergulho medido, fase 2
- Foliacao vertical, fase 2
- 54 Direção e mergulho de xistosidade
- 54 Direção e mergulho de clivagem
- 32 Clivagem de crenulação ou fratura com mergulho medido, fase 3
- 38 Clivagem de crenulação ou fratura com mergulho medido, fase 4
- Direção de clivagem vertical
- 58 Direção e mergulho de juntas
- 15 Junta com mergulho medido
- Junta Vertical
- 15 Direção e caimento de lineação
- 27 Direção e caimento de lineação de interseção
- 34 Lineação B
- 59 Lineação B, fase 2
- 16 Lineação B, fase 3
- 62 Lineação de estiramento ou mineral
- 47 Lineação de estiramento ou mineral, fase 1
- 15 Lineação de estiramento ou mineral, fase 2
- 35 Estrutura em lápis
- 84 Eixo de crenulação
- 26 Dobras de arrasto de pequeno tamanho,com flancos longos indicados
- Contato geológico
- Contato geológico aproximado
- Falha indiscriminada
- Falha indiscriminada aproximada
- Falha de empurrão
- Falha de empurrão aproximada
- Falha transcorrente dextral aproximada
- Falha normal
- Falha normal aproximada
- Traço axial definido de anticlinal normal
- Traço axial aproximado de anticlinal normal
- Traço axial definido de sinclinal normal
- Traço axial aproximado de sinclinal normal
- Traço axial aproximado de anticlinal invertido
- Traço axial aproximado de sinclinal invertido

Figure 7-1A

Jaguar Mining Inc.

Caeté Operations
Roça Grande & Pilar Mines
Minas Gerais State, Brazil
Regional Geology Legend

April 2018

Source: Jaguar Mining Inc., 2015.

LOCAL AND PROPERTY GEOLOGY

ROÇA GRANDE DEPOSIT

The Roça Grande Mine is located in the upper unit of the Nova Lima Group. The dominant rock types found in the mine are a mixed assemblage of meta-volcanoclastics and meta-tuffs. These are represented by quartz sericite and chlorite schists with variable amounts of carbonate facies BIF, oxide-facie BIF, metacherts, and graphitic schists. The iron formations, chert units, and graphitic schist units are intimately inter-bedded with each other, such that they form an assemblage of chemical and clastic sedimentary units.

Two important BIF horizons are present at the Roça Grande Mine and they are separated by a central unit of sericitic phyllites and schists (Figure 7-2). The two BIF horizons are roughly parallel and are called Structures 1 and 2. In general, the southern BIF unit (Structure 2) is thicker than the northern BIF unit (Structure 1). The North Structure (Structure 1) hosts the RG01 mineralized body and the South Structure (Structure 2) hosts the RG02, RG03, and RG06 mineralized bodies (Figure 7-3). The RG07 mineralized body is located immediately in the hanging wall of Structure 1 and is hosted mostly by a quartz vein. The bedding is well defined by the carbonate-facies iron formation and chert found in the BIF horizons, with an overall strike of azimuth 70º to 80º, and dipping approximately 30º to 35º south (Figure 7-4).

At the mine scale, folding of the iron formation stratigraphy is generally absent. Local folding and faulting in the Structure 2 has been observed at the RG06 mineralized body where a 200 m to 300 m strike length of the stratigraphy has been folded.

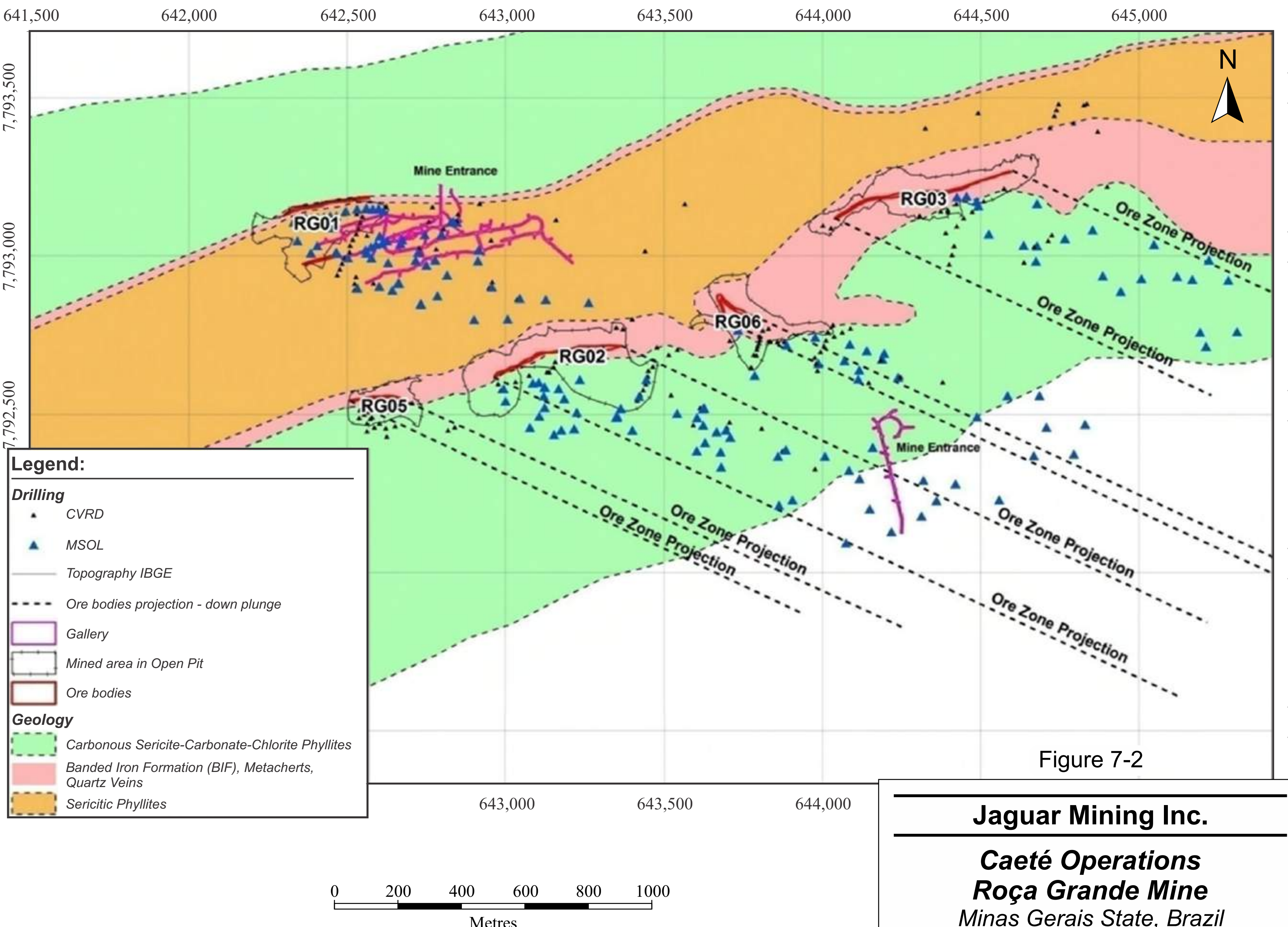

Figure 7-2

Jaguar Mining Inc.

Caeté Operations
Roça Grande Mine
Minas Gerais State, Brazil

Property Geology

April 2018

Source: Jaguar Mining Inc., 2013.

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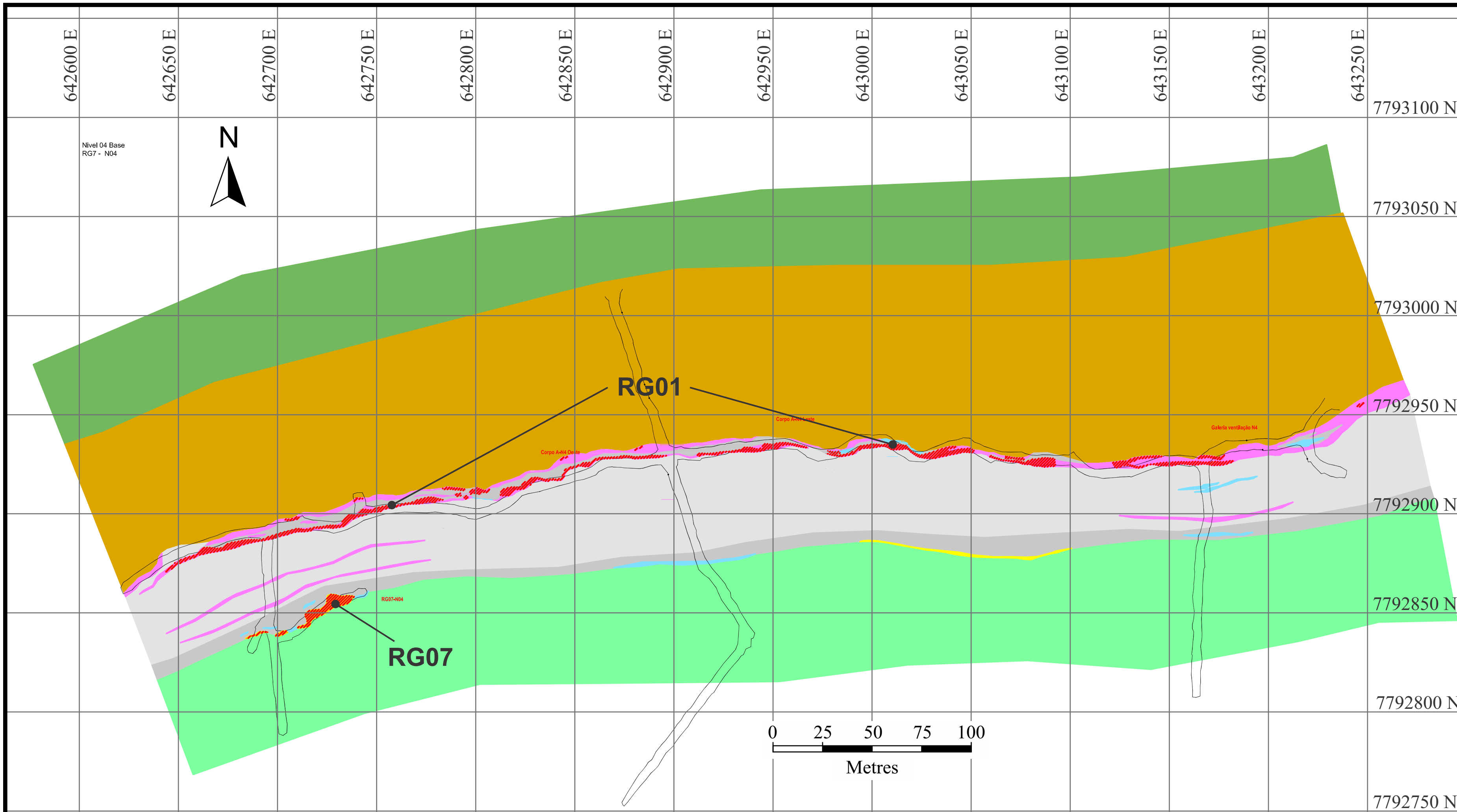

Legend:

- *FF - Banded Iron Formation*
- *XG - Graphitic Schist*
- *X1 - Carbonate quartz schist with sericite and carbon*
- *X2 - Carbonate quartz schist with sericite*
- *X2Cl - Carbonate quartz schist with sericite and clorite*
- *XS - Carbonate clorite sericite quartz schist with volcanic quartz*
- *VQz - Quartz vein*
- *VQz - Smoky Quartz vein with free gold*
- *Ore Zone*

April 2018

Source: Jaguar Mining Inc., 2015.

Figure 7-3

Jaguar Mining Inc.

Caeté Operations
Roça Grande Mine
Minas Gerais State, Brazil
Level Plan, 4th Level

RPA

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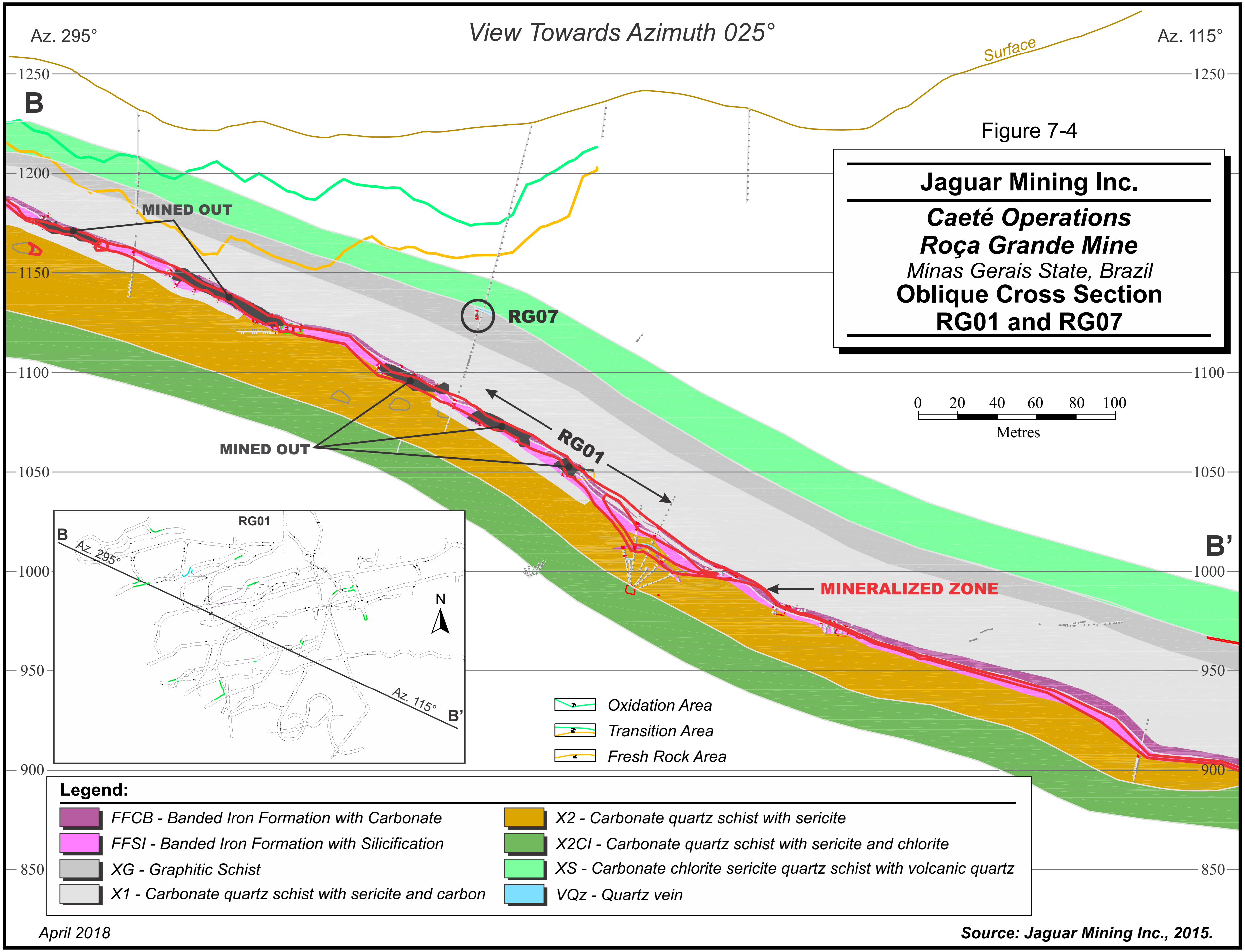


Figure 7-4
Jaguar Mining Inc.
Caeté Operations
Roça Grande Mine
Minas Gerais State, Brazil
Oblique Cross Section
RG01 and RG07
View Towards Azimuth 025°
Az. 295°
Az. 115°
B
B'
Surface
1250
1200
1150
1100
1050
1000
950
900
850
MINED OUT
MINED OUT
RG07
RG01
MINERALIZED ZONE
0 20 40 60 80 100
Metres
RG01
B
Az. 295°
Az. 115°
B'
N
Oxidation Area
Transition Area
Fresh Rock Area
Legend:
FFCB - Banded Iron Formation with Carbonate
FFSI - Banded Iron Formation with Silicification
XG - Graphitic Schist
X1 - Carbonate quartz schist with sericite and carbon
X2 - Carbonate quartz schist with sericite
X2CI - Carbonate quartz schist with sericite and chlorite
XS - Carbonate chlorite sericite quartz schist with volcanic quartz
VQz - Quartz vein
April 2018
Source: Jaguar Mining Inc., 2015.

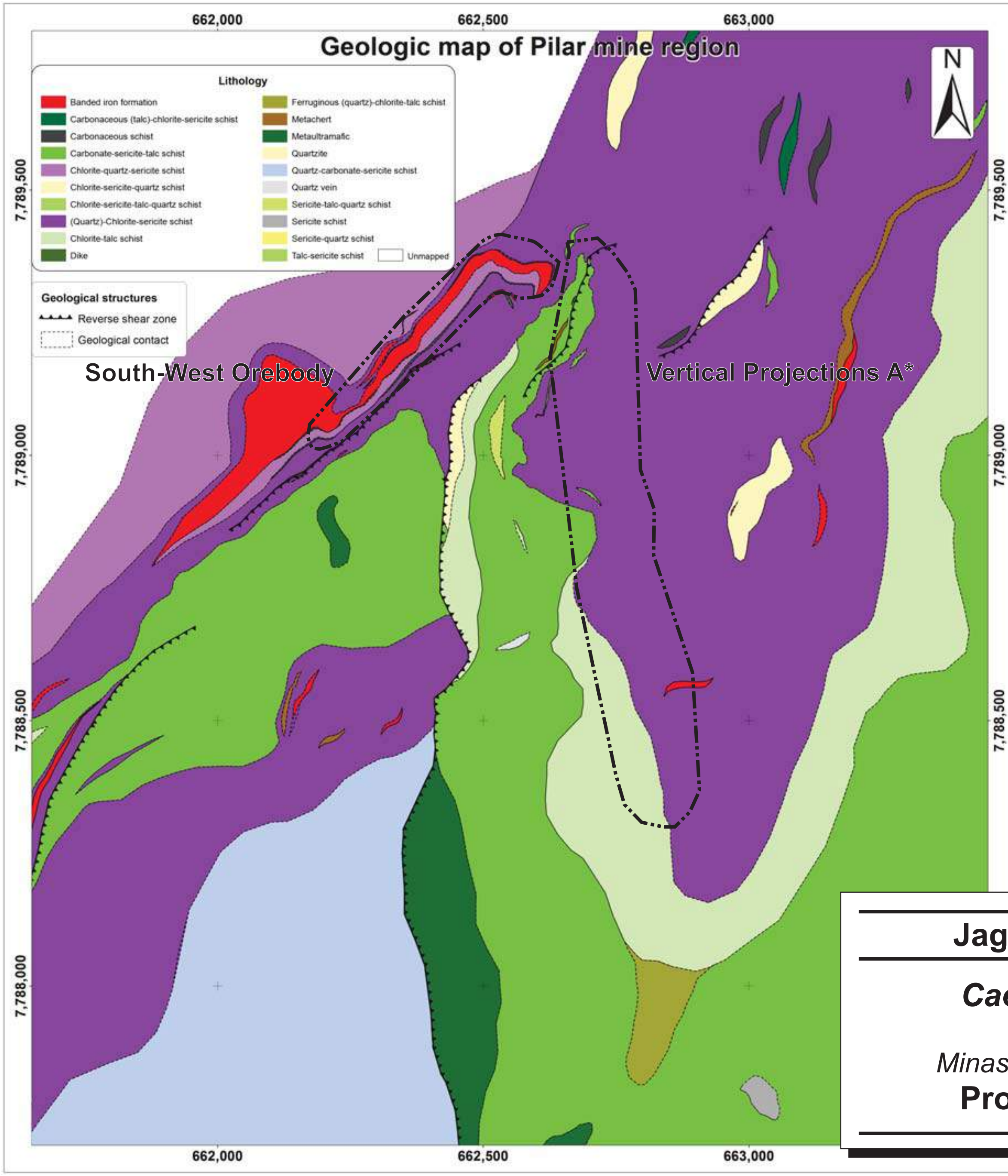
PILAR DEPOSIT

The Pilar deposit is hosted by the basal units of the Nova Lima Group (Figure 7-5). The rocks in the region of the mine are comprised of tholeiitic basalts and komatiite flows of the Ouro Fino and Morro Vermelho Units, along with their intrusive equivalents. To the west, these basal units are in fault contact with mica-quartz schists, chlorite-quartz schists, chlorite-sericite schists, and chemical and clastic sedimentary rocks of the Santa Quitéria Unit. The chemical sedimentary rocks include chert and BIF. To the east, the units are in fault contact with migmatites and granitic gneisses of the Bação Complex that form the basement sequence.

On the mine property, all rock units strike in a northeasterly direction. The regional strike of the units changes to a southeasterly direction to the south of the mine property. Regional mapping has found that the foliations mostly dip steeply to the southeast. The regional-scale thrust faults also strike in a northeasterly direction and dip steeply to the southeast on the mine property.

On the property scale, at least three different orientations of faults are recognized. The earliest fault is the northeasterly-striking regional-scale thrust fault that forms the contact between the Santa Quitéria Unit and the Ouro Fino and Morro Vermelho Units. This thrust fault cross-cuts and terminates a more northerly set of faults that have a strike of approximately 020° and dip steeply to the east. The third set of faults are oriented in an east-west orientation and have subvertical dips. The displacement along these faults has been observed in underground exposures to be in the order of one to two metres (Figure 7-6).

The host rocks of the mine have been affected by at least one period of folding (Figure 7-7). Structural mapping on the property has shown that the orientation of the fold axes dip approximately 45° to the southeast (azimuth 135°).



Vertical Projections A:

BA, BF, BFII, LPA
LHW, LFW, Torre

0 200 300 400 500
Metres

Figure 7-5

Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil
Property Geology

Source: Jaguar Mining Inc., 2014.

Figure 7-6

Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil
Late-Stage Cross Faults

April 2018

Source: RPA, 2016.

Figure 7-7

Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil
Folded Iron Formation

April 2018

Source: RPA, 2016.

MINERALIZATION

ROÇA GRANDE

At Roça Grande, gold mineralization is more commonly associated with BIF horizons. In RG01, RG02, RG03, and RG06 mineralized bodies, the gold mineralization is developed roughly parallel to the primary bedding and is related to centimetre-scale bands of massive to disseminated pyrrhotite and arsenopyrite. In many cases, better gold values are located along the hangingwall contact of the iron formation sequence and is hosted by carbonate-facies iron formation (Figure 7-8). The grades generally decrease towards the footwall where the iron formation becomes more silica-rich. The thicknesses of the iron formations are observed to be affected by broad-scale boudinaged structures (Figure 7-9). Better gold grades are found in the thicker portions while the narrower portions of the boudinaged structures have lower grades. Late-stage, barren quartz veins are also ubiquitously present and also display a boudinaged form (Figure 7-10).

RPA recommends that structural mapping information be integrated with of isopach maps of the carbonate iron formation and trend analyses of the gold distribution to identify any primary controls on the distribution of the BIF-hosted gold mineralization.

In the RG07 mineralized body, gold is found to be hosted in quartz veins that are contained within a sericite (chlorite) schist associated with an east-west oriented shear zone (Machado 2010).

View Looking West

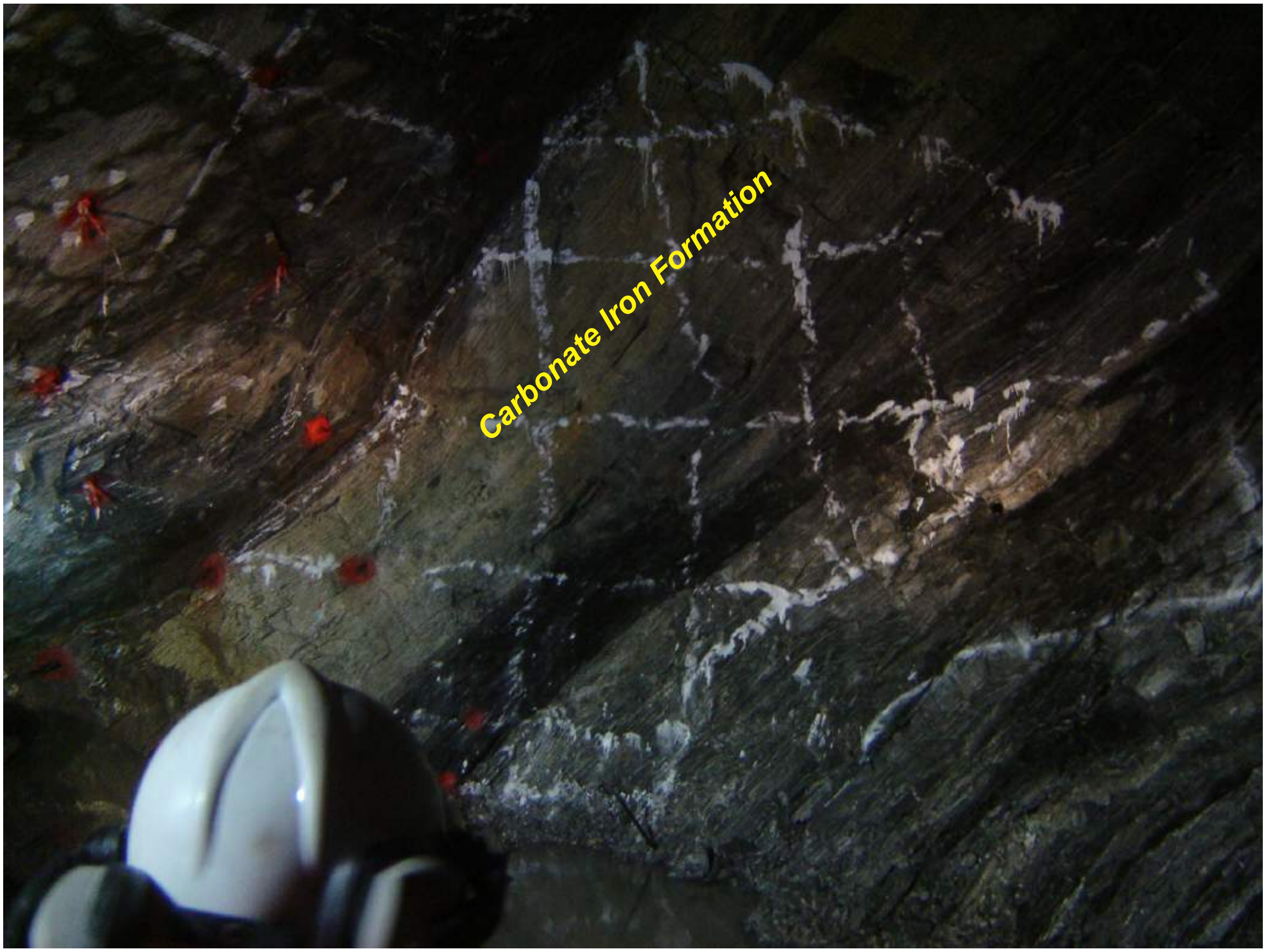


Figure 7-8

Jaguar Mining Inc.

Caeté Operations
Roça Grande Mine
Minas Gerais State, Brazil
Iron Formation Sequence, RG01 Deposit

April 2018

Source: RPA, 2016.

Figure 7-9

Jaguar Mining Inc.

Caeté Operations
Roça Grande Mine
Minas Gerais State, Brazil

Up-Dip View of Boudinage Structure in Carbonate Iron Formation, RG01 Deposit

April 2018

Source: RPA, 2016.

Figure 7-10

Jaguar Mining Inc.

Caeté Operations
Roça Grande Mine
Minas Gerais State, Brazil
Late Stage, Barren, Boudinaged Quartz Vein in Iron Formation, RG01 Deposit

April 2018

Source: RPA, 2016.

PILAR

The mineralization at the Pilar Mine is hosted by a number of the host rock units including the BIFs along with mafic schists and talc-chlorite schists. Gold mineralization is associated with sulphide mineralization consisting of arsenopyrite and pyrrhotite. Quartz veins and veinlets can also be present, but the presence of quartz is not a prerequisite for higher gold values. The sulphide minerals occur mostly as disseminations in the host rock, but can achieve semi-massive to massive concentrations locally over a few tens of centimetres (Figure 7-11). Quartz veins are typically less than one metre in width and can be observed to be of two generations. The quartz veins of the first generation are typically associated with the gold mineralization and are folded. The quartz veins of the second generation are typically lower grade or barren and not affected by folding.

The SW Orebody is hosted by iron formation of the Santa Quitéria Unit. The remaining mineralized lenses are hosted by the mafic and ultramafic schists of the Ouro Fino and Morro Vermelho Units.

Figure 7-11

Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil
Arsenopyrite-Pyrrhotite Mineralization

April 2018

Source: RPA, 2016.

8 DEPOSIT TYPES

Gold mineralization has been found mainly within three general types of deposits in the Iron Quadrangle:

1. Syngenetic deposits. These are hosted by BIF and chemical sedimentary rocks (meta-chert). Gold is typically associated with fresh to limonite-rich sulphide masses, ranging from disseminated to massive, in association with the BIF layers or in hydrothermally altered schists rich in quartz, chlorite, and sericite. Disseminated sulphides hosted in quartz schist, BIFs, and meta-cherts have also been economically exploited.

2. Epigenetic deposits dominated by hydrothermal quartz veins (silicification zones). Gold is related with masses of milky to microcrystalline quartz containing fresh to limonite-rich sulphides and, sometimes, visible gold. The veins are hosted by hydrothermally altered schists rich in quartz, chlorite, carbonate, and sericite.

3. Paleo-placer deposits. Conglomerates are found in the geologic section that contain clasts of quartzite, milky quartz, massive and banded chert, felsic volcanic rocks, and quartz schists. The matrix can be quartzitic, arkosic, or carbonaceous. Locally, round (buckshot) pyrite and crystalline pyrite are abundant in the matrix.

Most gold-bearing units in the Iron Quadrangle, with the exception of the gold-bearing conglomerates, are strongly controlled by linear structures such as fold axes, stretching lineations, and intersection foliations. The orebodies form cigar or pencil shapes, showing continuity along the plunge and relatively small distances laterally. They can be longer than 5 km, such as at the Morro Velho and Cuiabá Mines. The thickness of the deposits varies from a few centimetres to more than 30 m.

Gold is associated with sulphides, mainly pyrite, pyrrhotite, and arsenopyrite. The distribution of the mineralized bodies is often controlled by mineral stretching lineations and fold axes.

9 EXPLORATION

ROÇA GRANDE

Jaguar has not carried out any surface-based exploration programs on the Roça Grande Mine property other than the drilling programs described in Section 10.

PILAR

The following exploration activities were carried out by Jaguar on the Pilar Mine property:

2014: Re-processing of magnetic data from the airborne CODEMIG survey

2015: High definition induced polarization (IP) ground survey covering the south extension of the Pilar Mine. The estimated depth of penetration of the survey was up to 1,000 m.

Geological mapping and soil sampling on the Pacheca and Cubas targets.

Soil sampling campaign, 744 samples. Anomalous values (0.15 g/t Au to 0.48 g/t Au) were outlined along an 800 m long area oriented in northeast-southwest direction.

10 DRILLING

ROÇA GRANDE

Jaguar has carried out a number of surface-based and underground-based drilling programs at the Roça Grande Mine since entering into a mutual exploration and option agreement with Vale in 2005. These in-fill and exploration drilling programs were focussed primarily on the RG01/07, RG02, RG03, and RG06 deposits.

Jaguar started diamond drilling at Roça Grande in August 2006. Following the completion of the first exploratory holes drilled at the RG01/07, RG02, RG03, and RG06 mineralized zones, Jaguar carried out an infill program to delineate these zones.

The drill hole lengths ranged from 40 m to 559 m. Holes were targeted to investigate the continuity of the mineralized zones laterally and at depth. Core diameters are consistently HQ (63.5 mm) from surface through the weathered rock to bedrock. At one to three metres into the bedrock, the holes were reduced to NQ diameter (47.6 mm). Surface diamond drilling was carried out by the drilling contractor Mata Nativa while the underground in-fill drilling programs were carried out by Jaguar staff using company-owned equipment.

The diamond drill core procedures adopted by Jaguar are described below:

- Only drill holes with more than 90% core recovery from the mineralized zone were accepted.
- Drill hole deviations (surveys) were measured by Sperry-Sun or DDI/Maxibore equipment.
- The cores were stored in wooden boxes of one metre length with three metres of core per box (HQ diameter) or four metres of core per box (NQ diameter). The hole's number, depth, and location were identified in the boxes by an aluminum plate on the front of the box and by a water-resistant ink mark on its side. The progress interval and core recovery are identified inside the boxes by small wooden or aluminum plates.

Drill collars were set out using a theodolite or global positioning system (GPS). All holes were drilled within three metres of the intended planned location. Azimuth and inclination for the angle holes were set by Brunton compass, deemed accurate to within 2º azimuth and <1º inclination.

Following completion of the holes, the collars were surveyed with theodolite and cement markers were emplaced. Downhole surveys were completed on all holes more than 100 m long using Maxibor equipment.

A small program of 14 surface-based exploration holes, for a total length of 794 m, was completed in September 2014 to test targets in the areas of the existing open pit mines.

A summary of the drilling campaigns completed at the Roça Grande Mine is provided in Table 10-1. The distribution of drill holes and channel samples taken from the open pit mines is shown in Figure 10-1.

TABLE 10-1 SUMMARY OF DRILLING CAMPAIGNS, ROÇA GRANDE MINE
Jaguar Mining Inc. – Caeté Operations

Period	Target	Diamond Drilling		Roto-Percussive Drilling	
		No. Holes	Total Length (m)	No. Holes	Total Length (m)
		Vale			
1973-1993	Roça Grande	116	18,288		
1994-1995	Roça Grande			313	17,270
1996-1999	RG01	8	550		
	RG02	9	910		
	RG05	18	1,530		
	RG03,04 and 06	10	625		
2000	RG02	4	410		
	RG03	8	571		
	RG05	1	63		
	RG06	3	379		
Sub-Total, Vale		**177**	**23,325**	**313**	**17,270**
		Jaguar			
2004-2010	RG01/07	111	10,625		
	RG02	59	16,580		
	RG03	56	9,407		
	RG06	55	7,954		
2011	RG01/07	71	9,983		
2012	RG01/07		19,922		
2013	RG01/07		10,142		
2014	RG03/RG06	14	794		
Sub-Total, Jaguar			**79,407**		

RPA has not identified any drilling, sampling, or core recovery issues that could materially affect the accuracy or reliability of the core samples at the Roça Grande Mine.

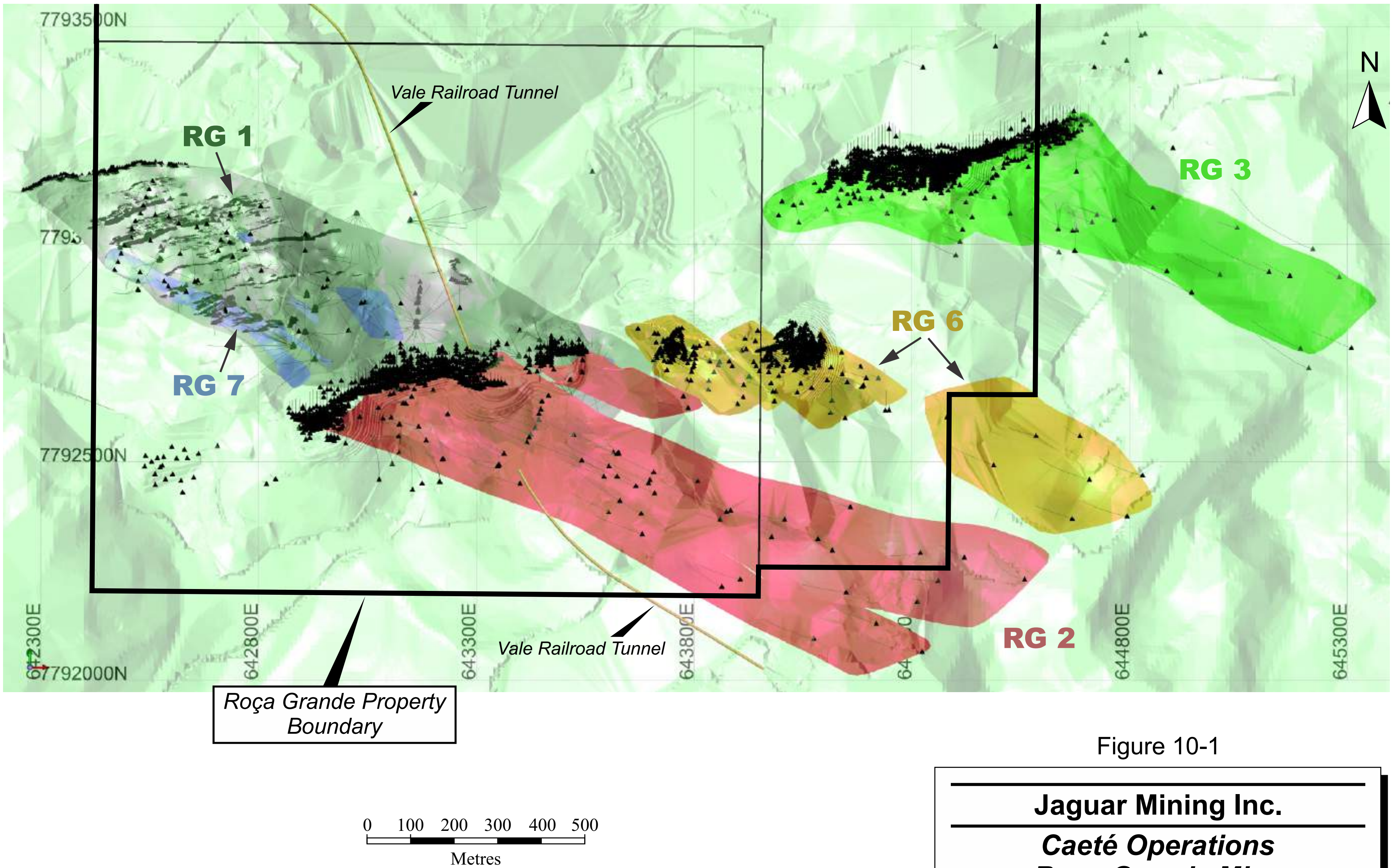


Figure 10-1

Jaguar Mining Inc.

Caeté Operations
Roça Grande Mine
Minas Gerais State, Brazil
Drill Hole and
Channel Sample Locations

April 2018

Source: RPA, 2016.

PILAR

In 2004, Jaguar started an exploration campaign at the Pilar property that targeted the Pilar Sul, São Jorge, and São Jorge Extensão sectors of the deposit. The exploration effort comprised three phases as follows:

PHASE 1

After interpretation of the available data, an exploratory diamond drilling program was carried out to test the structural controls and the continuity of the mineralization to 200 m below the surface. Mineralized shoots mainly occurred within the BIF. The holes intercepted several significant mineralized intervals and pointed out the need for additional investigation of the structural geology of the area. During this phase, a total 6,489 m was drilled in 36 diamond drill holes.

PHASE 2

Diamond drill holes tested the structural control and the continuity of the mineralization to 300 m below surface. Mineralized shoots occurred both within the BIF and the shear zone. A total of 12,926 m in 41 holes was drilled during Phase 2.

PHASE 3

Phase 3 included underground exploration and underground and surface diamond drilling. Infill underground drilling was completed to delineate mineralization at 693 MASL. Surface drilling was carried out to obtain more data on the structural control and the main zones of mineralization. Through December 2010, Jaguar completed a total of 10,390 m in ramps and drifts, 11,200 m of underground drilling in 180 holes, and 10,186 m of surface drilling in 19 holes.

Late in 2010 and during 2011 (subsequent to the Caeté Feasibility Study), Jaguar completed an underground drilling program to investigate the down plunge continuation of the mineralization to Level 11, approximately 860 m from surface. A total of 12,574 m in 44 drill holes were completed, confirming the extension of the mineralized zones to depth. Delineation drilling underground continued in 2012 and 2013 (Jaguar 2015b).

A small program of exploration drilling (9 holes, 910 m) was carried out in November 2014 to test near surface targets in the proximity of the crown pillar of the Pilar Mine. In late 2014 to May 2015, Jaguar carried out an underground exploration drilling program focussed on testing for additional gold mineralization along the down-plunge projections of the AB and C orebodies. In all, 90 holes were completed for a total length of 14,875 m.

Jaguar carried out a program of growth exploration drilling during 2017 with the objective of targeting the down-plunge continuity of the principal mineralized BIF orebodies between Levels 11 to 16, up to approximately 350 m vertically below the then-current development. This drilling program was successful in intersecting the target zones along the down-plunge directions. A total of 23 holes were completed for a total length of 7,081 m.

The drilling procedures at the Pilar Mine were similar to those used at the Roça Grande Mine. Surface diamond drilling was carried out by the drilling contractor Mata Nativa. The underground drilling program in 2015 was completed by Geosol Ltd. of Belo Horizonte using BQ (36.5 mm), NQ (47.6 mm), HQ (xx mm) and LTK (36.3 mm) sized equipment. The location of all 2017 diamond drill hole collars was accurately surveyed using a Total Station survey instrument, and downhole deviations were surveyed using non-magnetic equipment with Icefield Tools' Gyro Path NSG equipment and SPT Stockholm Precision Tools with GyroMaster Solid State North-seeking gyro. In-fill drilling programs carried out from underground stations were completed by Jaguar staff and company-owned equipment.

All core is transported to Jaguar's core shack that is located at the Roça Grande Mine where core technicians prepare the core boxes for logging and sampling. Each core box is identified with an aluminum tag that contains the hole number, the box number, and the from and to intervals of the core for each specific core box (Figure 10-2). The drill core is then logged by qualified geologists who record the major lithologies, alteration, structure, and mineralization into digital drill logs. The logging geologists also mark off those intervals of core which are to be sent for assaying. The core boxes are then passed along to the core technicians for sawing and sampling of the selected intervals. All remaining core is stored at the core storage facility at the Roça Grande Mine.

Figure 10-2

Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil

Drill Core and Samples

April 2018

Source: RPA, 2016.

A summary of the drilling campaigns completed at the Pilar Mine is provided in Table 10-2 and a summary of significant intersections from the 2017 exploration program is provided in Table 10-3 (Jaguar 2017a, 2017b). The distribution of drill holes and channel samples is shown in Figure 10-3.

TABLE 10-2 SUMMARY OF DRILLING CAMPAIGNS, PILAR MINE
Jaguar Mining Inc. – Caeté Operations

		Diamond Drilling		Roto-Percussive Drilling	
Period	**Target**	**No. Holes**	**Total Length (m)**	**No. Holes**	**Total Length (m)**
VALE					
1989-1994		65	11,812	60	2,960
2002-2003		10	3,069		
Sub-Total, Vale		**75**	**14,881**	**60**	**2,960**
JAGUAR					
2004-2010	Phase 1	36	6,489		
	Phase 2	41	12,926		
	Phase 3-UG	180	11,200		
	Phase 3-Surface	19	10,186		
Q4 2010-2011		44	12,574		
2012	UG-Exploration	31	4,005		
	UG-Definition	121	9,705		
2013	UG- Exploration	40	5,978		
	UG-Definition	51	3,557		
2014	UG- Exploration	60	8,398		
	UG-Definition	125	10,818		
	Surface Expl.	9	910		
2015	UG- Exploration	30	6,477		
	UG-Definition	12	879		
2016	UG- Exploration	19	2,994		
	UG-Definition	89	8,143		
2017	UG- Exploration	23	7,081		
	UG-Definition	150	9,534		
Sub-Total, Jaguar		**1,080**	**131,854**		

TABLE 10-3 SUMMARY OF SIGNIFICANT INTERSECTIONS, 2017 EXPLORATION DRILLING PROGRAM, PILAR MINE
Jaguar Mining Inc. – Caeté Operations

Hole ID	From	To	Core Length (m)	Estimated True Width (m)	Average Grade Au (g/t)
PPL440	45.7	53.1	7.4	6.9	1.4
	99.8	102.5	2.7	2.3	1.7
	277.8	279.3	1.5	1.4	4.5
PPL441	64.8	68.4	3.6	3.2	7.1

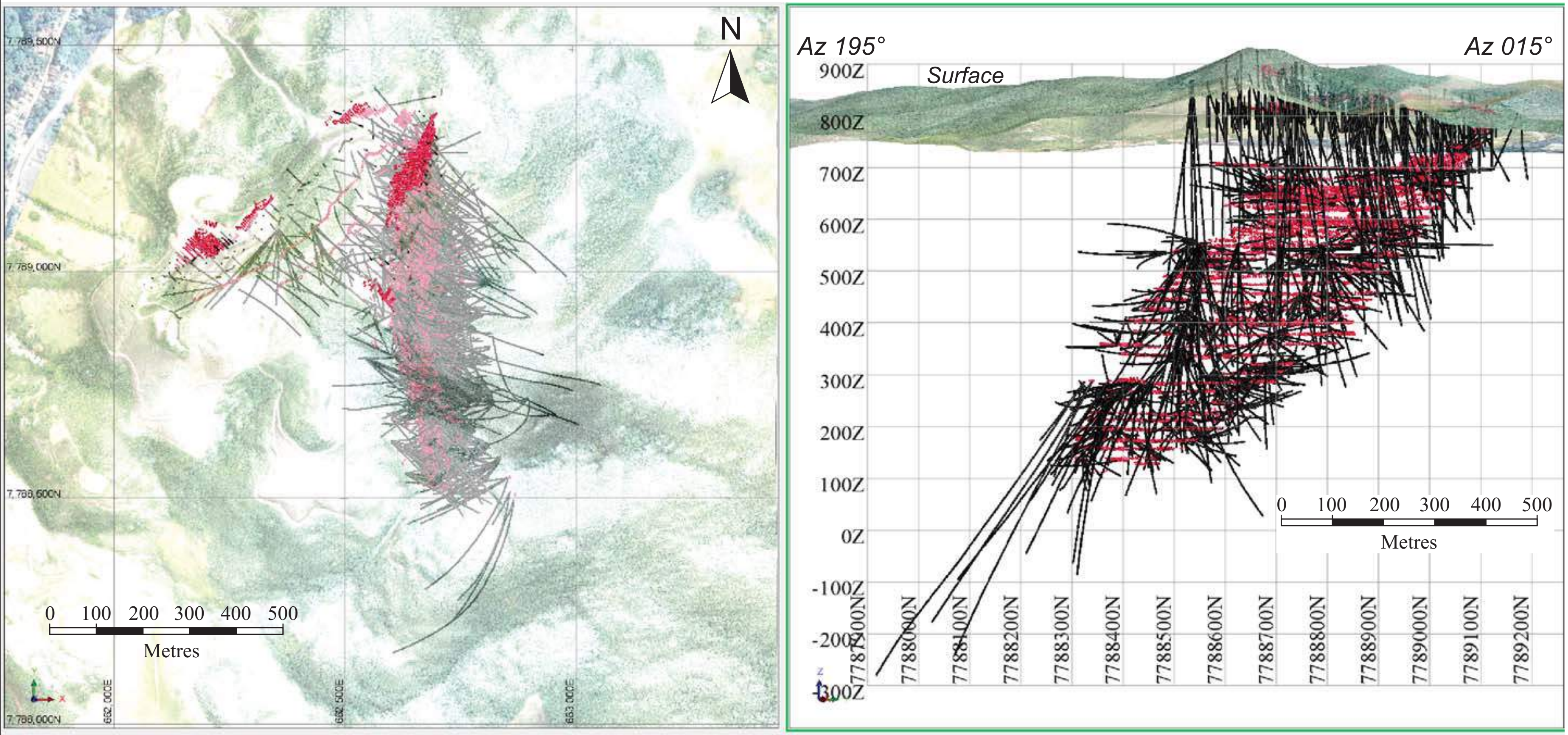
Hole ID	From	To	Core Length (m)	Estimated True Width (m)	Average Grade Au (g/t)
	72.9	74.4	1.6	1.4	2.2
	115.7	123.6	7.9	6.4	2.3
	127.6	132.4	4.8	4.6	6.1
	185.8	189.2	3.4	2.3	1.6
	204.7	233.7	29.0	7.2	6.8
	248.4	252.9	4.5	1.1	3.9
	276.1	282.7	6.5	6.4	5.5
	288.2	298.4	10.3	9.4	2.1
PPL442	7103	80.9	9.6	8.0	2.3
	132.3	134.0	1.6	1.4	1.4
PPL449A	9.6	12.6	3.0	2.9	4.4
	72.0	86.9	14.9	12.6	3.0
	95.0	97.0	2.0	2.0	3.5
	368.5	373.2	4.7	4.3	6.7
	376.7	410.9	34.2	26.2	4.6
	440.8	470.0	29.3	22.5	10.8
	498.6	506.9	8.3	7.6	1.6
	510.7	513.2	2.5	2.2	4.9
	517.7	525.3	7.6	7.0	9.0
PPL445	57.0	67.0	10.1	9.1	2.4
	116.0	125.0	9.0	8.2	2.0
	138.0	144.0	6.0	5.2	25.3
	154.0	165.8	11.8	9.6	15.9
PPL450	27.7	34.1	6.4	4.1	3.1
	63.0	71.2	8.2	7.4	4.9
	77.8	81.4	3.6	3.2	5.1
	164.4	171.5	7.4	6.8	5.2
Including	*168.7*	*171.5*	*7.4*	*6.8*	*5.2*
PPL450	372.1	421.4	49.3	38.7	5.3
Including	*385.7*	*391.0*	*5.3*	*4.1*	*11.0*
and	*415.9*	*421.4*	*5.5*	*4.3*	*8.3*
PPL450	495.5	496.9	5.5	4.3	8.3
	514.3	517.2	3.0	2.9	4.0
PPL451	1.9	6.4	4.6	4.3	1.5
	16.3	36.9	20.6	19.8	7.7
	41.9	51.3	9.4	9.0	3.2
	71.1	76.0	5.0	4.5	1.9

Notes:
1. No capping values applied when calculating the weighted average grades.
2. The estimated true widths are calculated in consideration of the angle of intersection of the drill hole with the local interpreted geometry of the target mineralized zone.

RPA has not identified any drilling, sampling, or core recovery issues that could materially affect the accuracy or reliability of the core samples.

Plan View

View Towards Azimuth 285 degrees



Legend

- *Channel Samples*
- *Drill Holes*

Figure 10-3

Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil
Drill Hole and
Channel Sample Locations

April 2018

Source: RPA, 2018.

REGIONAL EXPLORATION DRILLING

During 2008 and 2009, Jaguar completed 92 (31,501 m) and 53 (8,650 m) drill holes, respectively, in the exploration concessions that are part of the Caeté Project.

During the third quarter of 2012, Jaguar completed a Phase 1 diamond drilling campaign at the Moita Target, located four kilometres northwest of the Caeté processing plant. A total of 16 drill holes for 1,115 m was carried out to test a 400 m by 50 m mineralized zone identified by soil sampling and trenching within hydrothermally altered metasediments hosted by a shear zone. Drilling results confirmed the southeast down plunge extension of the mineralization.

In 2017, Jaguar completed a small program of exploration drilling on the Pacheca Target (nine diamond drill holes, totalling 2,032 m in length) and the Cubas Target (three diamond drill holes, totalling 1,951.6 m in length). The results from the drilling at the Cubas Target were generally negative, however, four of the drill holes completed at the Pacheca Target intersected anomalous gold mineralization. A summary of the significant intersections from the 2017 drilling program at the Pacheca Target is provided in Table 10-4.

TABLE 10-4 SUMMARY OF SIGNIFICANT DIAMOND DRILLING INTERSECTIONS, PACHECA TARGET
Jaguar Mining Inc. – Caeté Operations

Hole ID	From	To	Core Length (m)	Average Grade (g/t Au)
FPCH001	45.35	55.05	9.70	0.34
	59.45	61.70	2.25	0.30
	63.50	65.50	2.00	2.81
	73.50	78.50	5.00	0.50
	86.05	89.05	3.00	0.15
	240.35	242.10	1.75	0.20
FPCH002	66.30	67.80	1.5	1.2
	72.25	73.00	0.75	0.96
	96.15	102.30	6.15	0.47
	108.60	110.60	3.30	0.49
FPCH003	85.05	85.50	0.45	0.50
FPCH004	224.10	228.10	4.00	0.28
	240.60	246.60	6.00	0.34

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

SAMPLING

The sampling procedures used by Jaguar are as follows.

SURFACE/EXPLORATION CHANNEL SAMPLING

- Channel samples are collected from outcrops and trenches as needed.
- The sites to be sampled are cleaned with a hoe, exposing the material by scraping it.
- Structures are mapped and the lithologic contacts defined, and samples marked so that no sample has more than one lithology.
- Samples have a maximum length of one metre and are from one kilogram to two kilograms in weight.
- Each sample is collected manually in channels with average widths between five and ten centimetres, and about three centimetres deep, using a hammer and a chisel.
- Either an aluminum tray or a thick plastic canvas drop sheet is used to collect the material.
- The samples are then stored in a thick plastic bag and identified by a numbered label, which is protected by a thin plastic cover and placed with the sample.
- At the sampling site, samples are identified by small aluminum plates, labels, or small wooden poles.
- Sketches are drawn with lithological and structural information. The sample locations are surveyed.

DIAMOND DRILLING CORE SAMPLING

- Surface drilling is performed by contractors with holes in HQ or NQ diameters.
- Underground drilling is performed either by Jaguar or contractors with holes in BQ and LTK diameters.
- Drill holes are accepted only if they have more than 85% of core recovery from the mineralized zone.
- All the drill holes have their deviations measured by Maxibor or equivalent survey tool.

- The cores are stored in wooden boxes of one metre length with three metres of core per box (HQ diameter) or four metres of core per box (BQ or LTK diameters).

- The number, depth, and location of each hole are identified in the boxes by an aluminum plate or by a water-resistant ink mark in front of the box.

- The progress interval and core recovery are identified inside the boxes by small wooden plates.

- During logging, all of the geological information, progress, and recovery measures are verified and the significant intervals are defined for sampling.

- Samples are identified in the boxes by highlighting their side or by labels.

- Samples are cut lengthwise with the help of a diamond saw and a hammer into approximately equal halves.

- One half of the sample is placed in a highly resistant plastic bag, identified by a label, and the other half is kept in the box at a warehouse.

- The remaining drill core from the surface-based drill holes is stored at a dedicated core storage facility that is located at the Roça Grande Mine.

- For many of the underground-based drill holes, samples are cut lengthwise with the help of a diamond saw and a hammer into approximately equal halves.

- For the shorter-length, bazooka-type drill holes completed from underground set-ups, the whole core is sampled as the core diameter does not permit splitting into halves.

UNDERGROUND PRODUCTION CHANNEL SAMPLING

- The sector of wall to be sampled is cleaned with pressurized water. Structures are mapped and lithologic contacts defined, and samples marked so that no sample has more than one lithology. Samples have a maximum length of one metre and are from two to three kilograms in weight.

- Channel samples were taken by manually opening the channels, using a hammer and a small steel pointer crowned by carbide or a small jackhammer.

- The channel samples have lengths ranging from 50 cm to one metre, average widths between five and ten centimetres, and are approximately three centimetres deep.

- Two sets of channel samples are regularly collected on the face. One set of channel samples is taken from the top of the muck pile once the work area has been secured. The second set of channel samples is taken at the waist height once the heading has been mucked clean and secured.

- Channel samples from the walls and back are collected at approximately 5 m intervals. The channel samples are collected starting at the floor level on one side and continue over the drift back to the floor on the opposite side.

- Either an aluminum tray or a thick plastic canvas is used to collect the material. The samples are then stored in a thick plastic bag and identified by a numbered label, which is protected by a thin plastic cover and placed with the sample.
- At the sampling site, samples are identified with paint.
- Sketches are drawn with lithological and structural information. The sample locations are surveyed.

SAMPLE PREPARATION AND ANALYSIS

For surface-based exploration drill holes completed prior to 2015, samples were prepared at the SGS laboratories in Belo Horizonte. For other drill holes and channels collected prior to 2015, samples were prepared at Jaguar's mine site laboratories by drying, crushing to 90% minus 2 mm, quartering with a Jones splitter to produce a 250 g sample, and pulverizing to 95% minus 150 mesh. Analysis for gold is by standard fire assay procedures, using a 50 g or 30 g sample and an atomic absorption (AA) finish.

The SGS laboratory based in Belo Horizonte meets international analytical standards and ISO 17025 compliance protocols. Analytical results from the SGS laboratory were forwarded to Jaguar's Exploration or Mine Departments by e-mail, followed by a hard copy.

All samples from the 2015, 2016, and 2017 drilling programs executed at the Pilar and Roça Grande mines were analyzed for gold at either Jaguar's mine site laboratory, or by the ALS Chemex laboratory located in Belo Horizonte. A total of 5,880 samples were submitted to the ALS laboratory in 2017 (Figure 11-1). A summary of the sample preparation and analytical packages used in 2017 is presented in Table 11-1.

The ALS Chemex laboratory based in Belo Horizonte meets international analytical standards and ISO 17025 compliance protocols. The Jaguar mine site laboratory is not ISO 17025 certified.

FIGURE 11-1 SUMMARY OF SAMPLES RECEIVED BY ALS CHEMEX LABORATORY, 2017

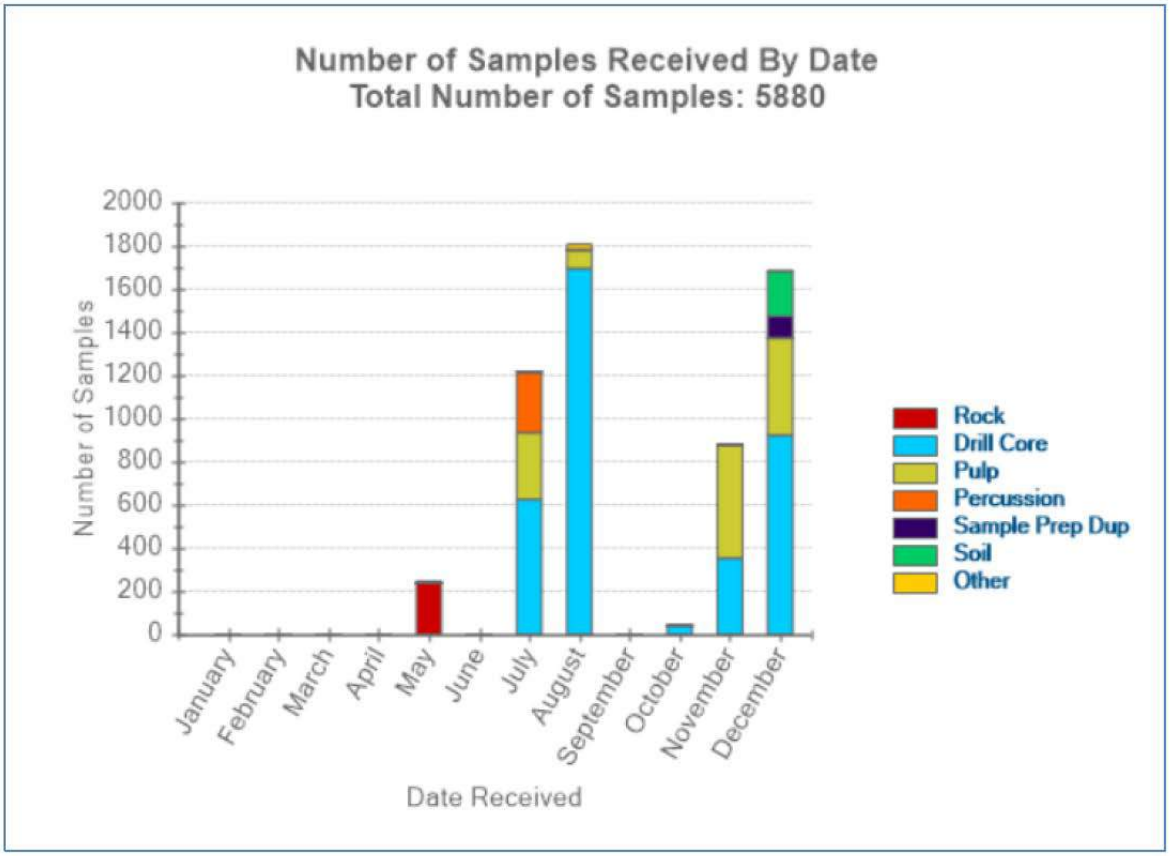


TABLE 11-1 SUMMARY OF SAMPLE PREPARATION AND ANALYTICAL METHODS, ALS CHEMEX, 2017
Jaguar Mining Inc. – Caeté Operations

Department	Section	Method Code	Number of Samples
Prep	PULVERIZATION	PUL-31: Pulverize split to 85% <75 um	524
	SHIPPING	SHP-21: Per Sample Shipping Charge	5022
	PREP MISCELLANEOUS	LOG-24: Pulp Login - Rcd w/o Barcode	1747
		LOG-27: Prep QC on Coarse Reject -70%	8
		LOG-22d: Sample login - Rcd w/o BarCode	100
	CRUSH	SPL-21d: Split sample - duplicate	100
Fire Assay	FA-AAS	Au-AA24: Au 50g FA AA finish	14
		Au-AA25: Ore Grade Au 30g FA AA finish	8
		Au-AA26: Ore Grade Au 50g FA AA finish	4133
	FA-GRAV	Au-GRA22: Au 50 g FA-GRAV finish	105
	FA-ICPAES	Au-ICP22: Au 50g FA ICP-AES finish	242
	FA-CON	Au-CON01: Control Au - Fire Assay	7
Spectroscopy	ICP-MS	ME-MS61: 48 element four acid ICP-MS	618
Package	Package	PREP-31: Crush, Split, Pulverize	2731
		PREP-31B: Crush, Split, Pulverize 1 kg	497
		HYP-PKG: TerraSpec and Spectral Interp	100
Grand Total			15956

At Jaguar's Caeté laboratory, samples from the Roça Grande and Pilar mines are dried and then crushed. A one kilogram sub-sample of the crushed material is selected for pulverization to approximately 70% minus 200 mesh. The ring-and-puck pulverizers are cleaned after each sample using compressed air and a polyester bristle brush. The analytical protocol for all samples employs a standard fire assay fusion using a standard 30 g aliquot, with the final gold content being determined by means of AA. The detection limit for fire assay analyses is 0.05 g/t Au. A second cut from the pulps is taken and re-assayed for those drill core samples where the grade is found to be greater than 30 g/t Au. If the two assays are in good agreement, only the first assay is reported. The AA unit is calibrated to directly read gold grades up to 3.3 g/t Au; samples with grades greater than this are re-assayed by diluting the solute until it falls within the direct-read range.

RPA recommends that the results from assays of all aliquots be reported by the laboratory and recorded in the drill hole database. The current database structure will require slight modification to allow for recording of all assay results for a given sample. The final assay for the sample will then be the average of all of the assay results.

RPA has reviewed the field and underground sampling procedures and is of the opinion that they meet accepted industry standards. In RPA's opinion, the sample preparation, analysis, and security procedures at the Roça Grande and Pilar mines are adequate for use in the estimation of Mineral Resources.

QUALITY ASSURANCE AND QUALITY CONTROL

Jaguar carried out a program of Quality Assurance/Quality Control (QA/QC) for all samples collected in 2016 and 2017. The QA/QC protocol includes carrying out a duplicate analysis after every 20 samples, representing an insertion frequency of 5%.

Commercially sourced standard reference materials: Rocklab standards Si81 (recommended value of 1.790 g/t Au), SJ80 (recommended value of 2.656 g/t Au), and SL76 (recommended value of 5.960 g/t Au), are inserted at a frequency of every 45 to 50 samples. In 2017, a total of 110 samples of standard Si84 were used, 43 samples of standard SJ80, and 19 samples of standard SL76.

Blank samples are inserted at a rate of one in every 20 samples, representing an insertion frequency of 5%. Blank samples are composed of crushed, barren quartzite or gneiss and are used to check for contamination and carry-over during the crushing and pulverization stage.

A number of pulp samples were forwarded to the ALS Chemex laboratory in Vespasiano, Minas Gerais, for third-party check analyses and the analytical results compared favourably with the Caeté analyses.

The results of the blanks, duplicates, and standards are forwarded to Jaguar's head office on a monthly basis for insertion into the Jaguar's internal database (BDI). There, the results from the standards samples are scanned visually for out-of-range values on a regular basis. When failures are detected, a request for re-analysis is sent to the laboratory. Only those assays that have passed the validation tests are inserted into the main database.

Sample control charts are presented in Figures 11-2 to 11-6.

FIGURE 11-2 CONTROL CHART FOR BLANK SAMPLES, 2017

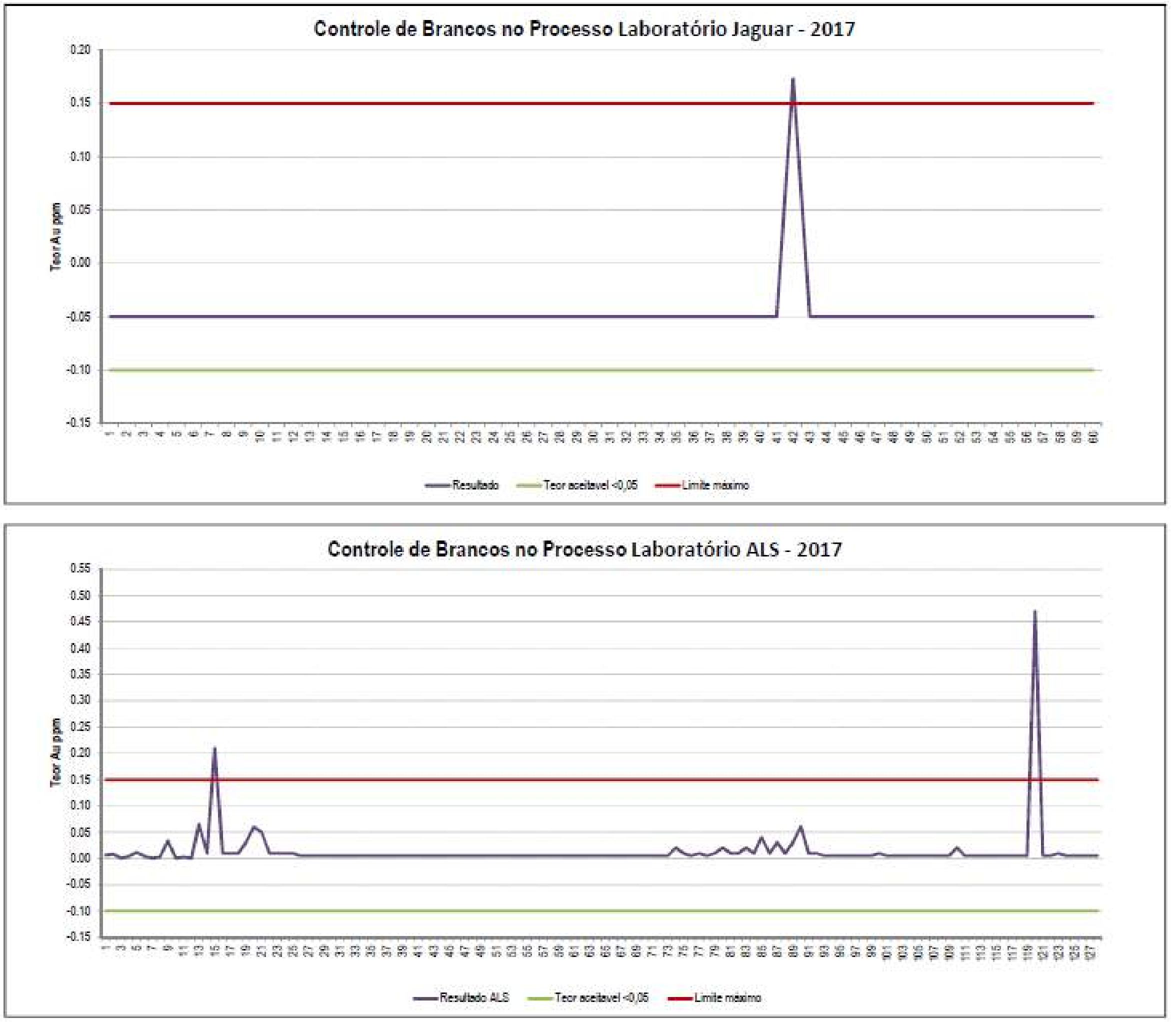
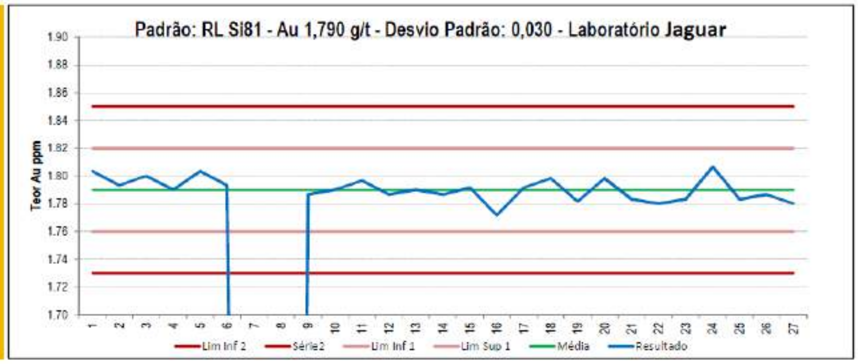


FIGURE 11-3 CONTROL CHART FOR CERTIFIED REFERENCE MATERIAL RL SI81, 2017

Si81	Mean	1.790		
	Std dev	0.030		
1 Std	Lower interval	1.760		
	Upper interval	1.820		
2 Std	Lower interval	1.73		
	Upper interval	1.85		
	Total standards used:		27	100%
1 Std	Total OK		25	93%
	Total No		2	7%
2 Std	Total OK		25	93%
	Total No		2	7%
	Tend.	1.47		
	Mean	1.65		
	Std dev	0.49		
Última Atualização =	2/19/2018			



Si81	Mean	1.790		
	Std dev	0.030		
1 Std	Lower interval	1.760		
	Upper interval	1.820		
2 Std	Lower interval	1.73		
	Upper interval	1.85		
	Total standards used:		83	100%
1 Std	Total OK		31	37%
	Total No		52	63%
2 Std	Total OK		49	59%
	Total No		34	41%
	Tend.	1.75		
	Mean	1.72		
	Std dev	0.22		
Última Atualização =	2/19/2018			

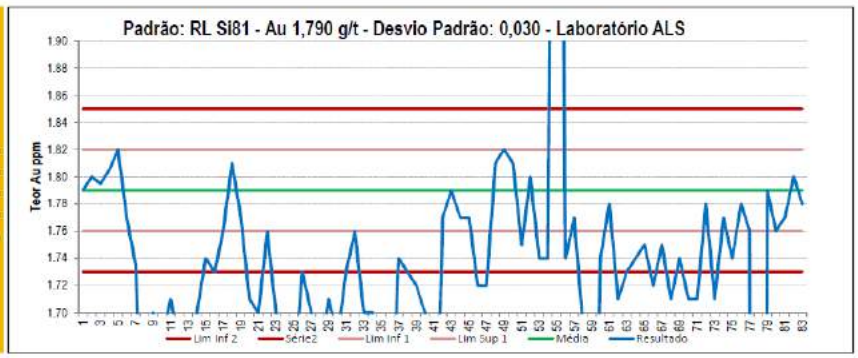
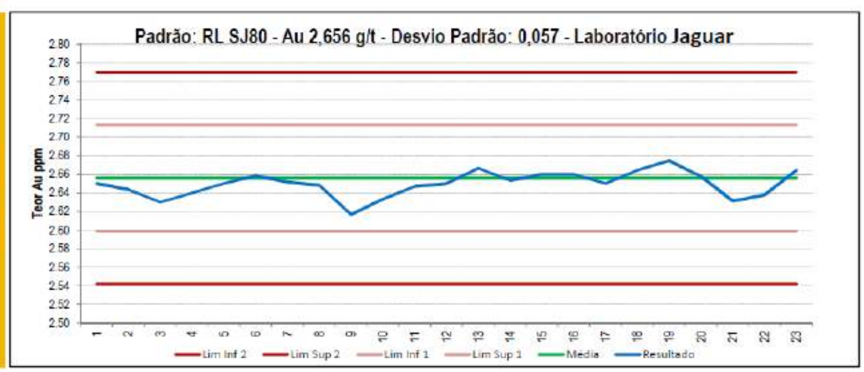


FIGURE 11-4 CONTROL CHART FOR CERTIFIED REFERENCE MATERIAL RL SJ80, 2017

SJ80	Mean	2.656		
	Std dev	0.057		
1 Std	Lower interval	2.599		
	Upper interval	2.713		
2 Std	Lower interval	2.542		
	Upper interval	2.77		
	Total standards used:		23	100%
1 Std	Total OK		23	100%
	Total No		0	0%
2 Std	Total OK		23	100%
	Total No		0	0%
	Tend.	2.64		
	Mean	2.65		
	Std dev	0.01		
Última Atualização =	2/19/2018			



SJ80	Mean	2.656		
	Std dev	0.057		
1 Std	Lower interval	2.599		
	Upper interval	2.713		
2 Std	Lower interval	2.542		
	Upper interval	2.77		
	Total standards used:		20	100%
1 Std	Total OK		8	40%
	Total No		12	60%
2 Std	Total OK		15	75%
	Total No		5	25%
	Tend.	2.55		
	Mean	2.59		
	Std dev	0.05		
Última Atualização =	2/19/2018			

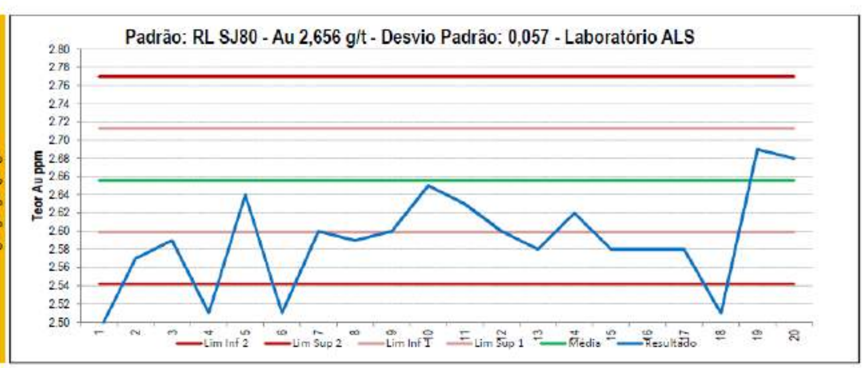
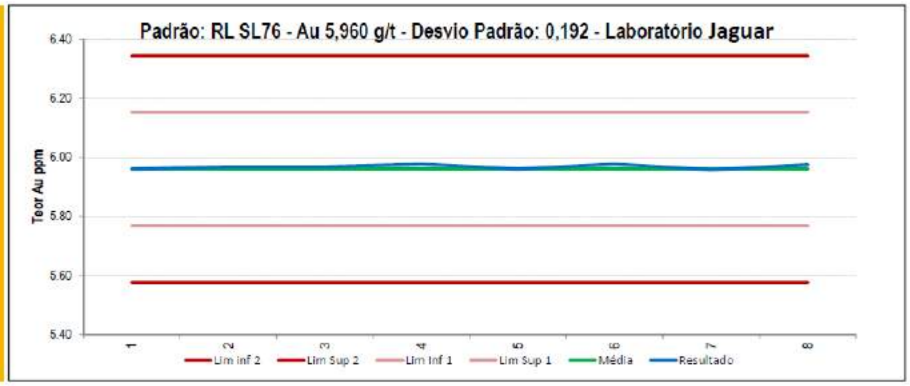


FIGURE 11-5 CONTROL CHART FOR CERTIFIED REFERENCE MATERIAL RL SL76, 2017

SL76	Mean	5.960	
	Std dev	0.192	
1 Std	Lower interval	5.768	
	Upper interval	6.152	
2 Std	Lower interval	5.576	
	Upper interval	6.344	
	Total standards used:	8	100%
1 Std	Total OK	8	100%
	Total No	0	0%
2 Std	Total OK	8	100%
	Total No	0	0%
	Tend.	5.96	
	Mean	5.97	
	Std dev	0.01	

Última Atualização = 2/19/2018



SL76	Mean	5.960	
	Std dev	0.192	
1 Std	Lower interval	5.768	
	Upper interval	6.152	
2 Std	Lower interval	5.576	
	Upper interval	6.344	
	Total standards used:	11	100%
1 Std	Total OK	7	64%
	Total No	4	36%
2 Std	Total OK	11	100%
	Total No	0	0%
	Tend.	5.78	
	Mean	5.81	
	Std dev	0.14	

Última Atualização = 2/19/2018

Referênci FUROS EXPLORAÇÃO PILAR e MTL - 2017

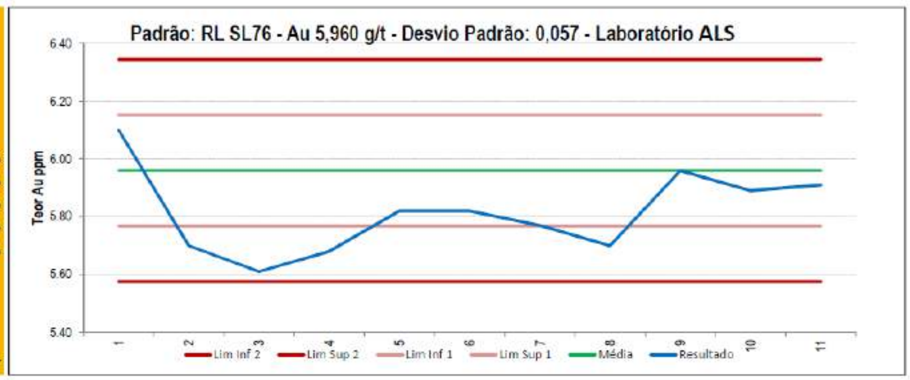
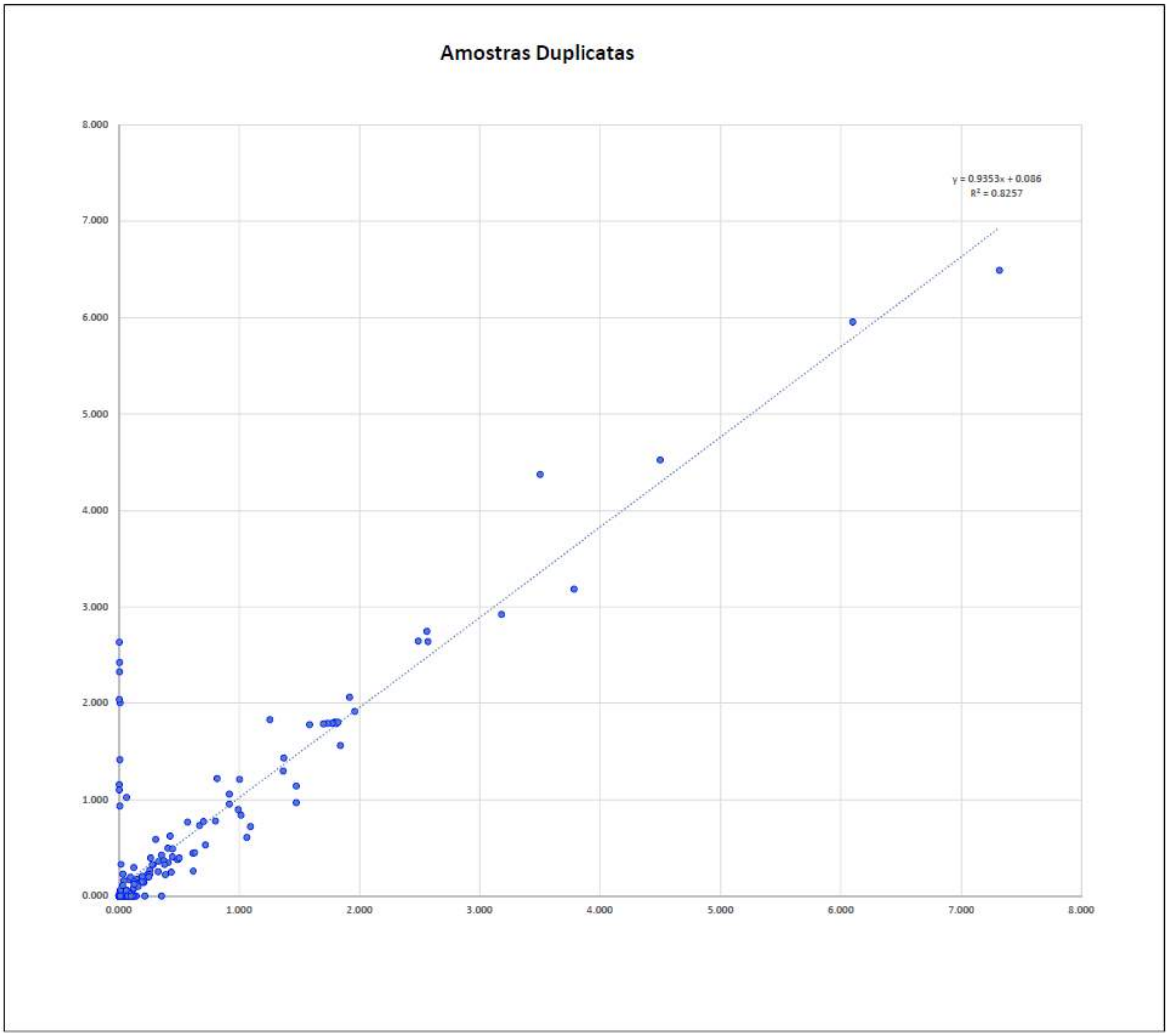


FIGURE 11-6 CONTROL CHART FOR EXTERNAL CHECK SAMPLES, 2017 - JAGUAR VS. ALS CHEMEX



In RPA's opinion, the QA/QC program as designed and implemented by Jaguar is adequate and the assay results within the database are suitable for use in a Mineral Resource estimate.

RPA recommends that the site geologists insert blind certified reference materials, blank samples, and duplicate samples at an insertion rate of 1% to 2% for on-going external, independent monitoring of the on-site laboratory performance.

12 DATA VERIFICATION

In the fall 2014, Jaguar commissioned MCB Serviços e Mineração (MCB) to carry out a detailed validation of the geological databases (Alvim, 2014). The scope also included an audit of the procedures and processes used to collect and process the geological data and to manage the geological database.

Approximately 5% of the drill hole and channel sample information used to prepare the current Mineral Resource estimate for the Roça Grande and Pilar mines was selected for review (Table 12-1). To carry out the comparison, all information was digitally re-coded and the results then compared with the source data contained in the master database.

TABLE 12-1 SUMMARY OF MCB DATABASE VALIDATION DATA
Jaguar Mining Inc. – Caeté Operations

Roça Grande Mine

	Drill Holes	Channel Samples
Total Data	250	766
5% subset	12	38

Pilar Mine

	Drill Holes	Channel Samples
Total Data	505	5,580
5% subset	25	279

While a small number of errors were detected in the Collar and Survey tables, no errors were detected in the Geology or Assay tables. The main areas of concern identified by MCB include:

- The shortfall in the preparation of written procedures regarding data collection,
- Database management and the database software used to manage the information, and
- Lack of a QA/QC program for the grade control channel samples.

RPA's validation checks on the drilling and sampling database for the Roça Grande and Pilar mines provided by Jaguar included:

- Conducted site visits to personally inspect the style and structural complexity of the gold mineralization and its host rocks at the Roça Grande and Pilar mines.

- Carried out a site visit to the Jaguar assay laboratory where the sample preparation and analytical procedures and equipment were reviewed.
- Carried out independent validation of the Pilar Mine drill hole database by means of spot checking of ten drill holes completed in the 2014 drilling program which intersected significant gold mineralization below Level 7 (elevation 280 m).
- Carried out independent validation of the Pilar Mine drill hole database by means of spot checking of 11 drill holes completed in the 2017 drilling program which intersected significant gold mineralization below Level 9 (elevation 170 m).
- Carried out independent validation of the Roça Grande Mine drill hole database by means of spot checking of 32 drill holes.
- Checked collar locations relative to either the digital topographic surface or the location of the underground excavation digital model as appropriate.
- Reviewed drill hole and sample orientations (azimuth/dip) relative to the location of the mineralized zones.
- Completed validity checks for out-of-range values, overlapping intervals, and mismatched sample intervals.
- Reviewed the reasonableness of the geological interpretations relative to the nature of the previously extracted mineralization.
- Reviewed the geological wireframes to ensure that a minimum mining width was honoured.
- Reviewed the coding of the mined out material in the block model to ensure a reasonable match with the excavation model, and
- Carried out a small program of check assaying on 21 mineralized samples from drill hole PPL454B. The results are presented in Table 12-2.

TABLE 12-2 SUMMARY CHECK ASSAY RESULTS
Jaguar Mining Inc. – Caeté Operations

From	To	Sample #	Jaguar Original	Actlabs Check	Difference
			g/t Au	g/t Au	g/t Au
521.65	522.20	187	0.04	< 0.03	-0.01
522.20	523.30	188	4.26	5.38	1.12
523.30	523.90	189	5.41	5.43	0.02
523.90	524.50	190	2.73	3.07	0.34
524.50	525.55	191	0.01	0.06	0.05
525.55	526.55	192	8.52	3.10	-5.42
526.55	527.60	193	0.13	0.87	0.74
527.60	528.55	194	14.20	9.22	-4.98
528.55	529.55	195	8.56	19.00	10.44

From	To	Sample #	Jaguar Original	Actlabs Check	Difference
529.55	530.57	196	13.00	15.80	2.80
530.57	531.40	197	22.90	20.90	-2.00
531.40	532.35	198	21.50	8.71	-12.79
532.35	533.30	199	2.02	1.94	-0.08
533.30	534.23	200	0.94	< 0.03	-0.91
534.23	535.61	202	2.18	1.56	-0.62
535.61	536.60	203	0.02	< 0.03	0.01
536.60	537.85	204	0.02	< 0.03	0.01
537.85	538.95	205	0.03	0.51	0.48
538.95	540.12	206	2.05	2.03	-0.02
540.12	541.12	207	0.75	0.78	0.03
541.12	542.12	208	0.04	< 0.03	-0.01

No material errors were noted for the Collar, Survey, Lithology, or Assay records reviewed for the Pilar Mine. A small number of errors were noticed in the Downhole Survey records of the drill holes contained in the Roça Grande database.

RPA observes that the surface and underground drill hole collar locations are reasonable and channel samples are appropriately located with respect to the existing underground infrastructures. RPA is of the opinion that the drilling and sampling databases are appropriate to be used in the preparation of Mineral Resource and Mineral Reserve estimates.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

The following information on mineral processing and metallurgical testing on the Caeté Gold Project, which includes Roça Grande and Pilar mines, was extracted from TechnoMine Services, LLC's (TechnoMine) Amended Feasibility Study (Amended FS) dated October 2010 (Machado, 2010).

MINERALIZATION

In the Pilar and Roça Grande deposits, the mineralized rocks occur within BIFs and shear zones, represented by disseminated gold-bearing sulphides associated with silica-sericitic-carbonatic solutions originating from hydrothermal activity. Gold is associated with sulphides (arsenopyrite, pyrite and pyrrhotite) or "free" in the quartz veins or in the contact quartz/sericite schist.

MINERAL PROCESSING AND METALLURGICAL TESTWORK

Jaguar constructed a centralized leaching carbon-in-pulp adsorption/desorption/ recovery (CIP-ADR) metallurgical plant to process the sulphide, transition and oxide ore from Pilar and Roça Grande.

Jaguar also carried out additional metallurgical test work to assess the inclusion of a Flotation Plant before the CIP-ADR plant to reduce the mass of solids to be leached (flotation concentrate only). All of the backfill material (flotation tailings) could then be directed to the underground mines and would be cyanide-free. Comprehensive testing was carried out by FLSmidth-Dawson Laboratories Inc (Dawson) in Salt Lake City, Utah USA, which included gravity separation, flotation, leaching, and adsorption tests. The testing by Dawson was conducted on a representative sample of mill feed containing 40% Roça Grande, 40% Pilar, and 20% Roça Grande oxide ore (referred to as the Dawson sample). Test results reported in 2009 indicated that the CIP-ADR Plant would need to treat only 10% of the solids mass contained in the Mill Feed, while 90% of the material would be available (fully cyanide-free and geotechnically-appropriate) to feed the Backfill Plant. After cycloning and thickening, 56% of the flotation tailings is transported to underground mines and the remaining 34% of the material is conveyed to an unlined Rejects Dam (exhausted mine pits).

Based on Dawson laboratory test work, TechnoMine estimated the overall gold recovery to be:

$$\text{Recovery} = 54\% + (46\% \times 0.90 \times 0.93 \times 0.985) = 91.9\%$$

- Gravity recovery = 54%
- Flotation recovery = 90%
- Leaching recovery = 93%
- ADR (Adsorption, Desorption, Electrowinning) recovery = 98.5%

This information was included as part of the process design criteria for the expansion of the Caeté plant.

14 MINERAL RESOURCE ESTIMATE

SUMMARY

RPA has audited and accepted the Mineral Resource estimates prepared by Jaguar for the Roça Grande and Pilar mines. Table 14-1 summarizes the Mineral Resources as of December 31, 2017 based on a US$1,400/oz gold price and an exchange rate of R$3.8 : US$1. A cut-off grade of 1.46 g/t Au was used to report the Mineral Resources for the Roça Grande Mine, and a cut-off grade of 1.93 g/t Au was used to report the Mineral Resources for the Pilar Mine.

TABLE 14-1 SUMMARY OF MINERAL RESOURCES AS OF DECEMBER 31, 2017
Jaguar Mining Inc. – Caeté Operations

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Roça Grande Mine:			
Measured	190	2.14	13
Indicated	897	2.91	84
Sub-total M&I	**1,087**	**2.77**	**97**
Inferred	1,759	3.48	197
Pilar Mine:			
Measured	2,203	4.47	317
Indicated	1,589	4.22	216
Sub-total M&I	**3,792**	**4.37**	**532**
Inferred	2,367	5.69	433
Total, Caeté Operations:			
Measured	2,393	4.29	330
Indicated	2,486	3.75	300
Sub-total M&I	**4,879**	**4.09**	**630**
Inferred	4,126	4.75	630

Notes:
1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at a cut-off grade of 1.46 g/t Au for the Roça Grande Mine and 1.93 g/t Au for the Pilar Mine.
3. Mineral Resources are estimated using a long-term gold price of US$1,400 per ounce.
4. Mineral Resources are estimated using an average long-term foreign exchange rate of 3.8 Brazilian Reais: 1 US Dollar.
5. Mineral Resources for the Roça Grande Mine are prepared by depletion of the 2015 grade-block model by the excavation volumes as of December 31, 2017.
6. A minimum mining width of approximately 2 m was used.
7. Gold grades are estimated by the inverse distance cubed interpolation algorithm using capped composite samples for the Roça Grande Mine. Gold grades were estimated by the ordinary kriging interpolation algorithm using capped composite sample for the Pilar Mine.
8. No Mineral Reserves are currently present at the Roça Grande Mine. Mineral Resources are inclusive of Mineral Reserves for the Pilar Mine

9. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
10. Numbers may not add due to rounding.

RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other factors that could materially affect the Mineral Resource estimates.

It is RPA's opinion that the Roça Grande and Pilar Mineral Resource estimates were prepared in a professional and diligent manner by qualified professionals and that the estimates comply with Canadian Institute of Mining, Metallurgy and Petroleum (CIM) for Mineral Resources and Mineral Reserves dated May 10, 2014 (CIM (2014) definitions).

ROÇA GRANDE

The updated block model for the Roça Grande Mine is based on drilling and channel sample data using a data cut-off date of March 30, 2015 and June 30, 2015, respectively. The database comprises 649 drill holes and 6,517 channel samples. The estimate was generated from a block model constrained by three-dimensional (3D) wireframe models that were constructed using a minimum width of one metre. The purpose of the minimum width criteria was to attempt to identify any areas of high grade mineralization that could be candidates for extraction using highly selective underground mining methods. A minimum width criteria was subsequently applied to the Mineral Resource reporting criteria by using a minimum grade times thickness product of 3 gram-metres.

The gold grades are estimated using the inverse distance cubed interpolation (ID^3) algorithm using capped composited assays. A capping value of 30 g/t Au was applied for the RG01 and RG06 Orebodies while a capping value of 50 g/t Au was applied for the RG02, RG03, and RG07 Orebodies. The Mineral Resources are reported using the gold grades estimated by the ID^3 method. The wireframe models of the mineralization and excavated material for the Roça Grande Mine were constructed using the excavation information as of December 31, 2017.

The mineralized material for each Orebody was classified into the Measured, Indicated, or Inferred Mineral Resource categories on the basis of the search ellipse ranges obtained from the variography study, the observed continuity of the mineralization, the drill hole and channel sample density, and previous production experience with these orebodies.

PILAR

The updated block model for the Pilar Mine is based on drilling and channel sample data using a data cut-off date of December 31, 2017. The database comprises 1,366 drill holes and 19,838 channel samples. The estimate was generated from a block model constrained by three-dimensional (3D) wireframe models that were constructed using a minimum width of two metres. The gold grades are estimated using the ordinary kriging (OK) interpolation algorithm using capped composited assays. Various capping values were applied to each of the different Orebodies, ranging from 60 g/t Au for the BA Orebody to 10 g/t Au for the LHW Orebody. The Mineral Resources are reported using the gold grades estimated by OK method. The wireframe models of the mineralization and excavated material for the Pilar Mine were constructed using the excavation information as of December 31, 2017.

The mineralized material for each Orebody was classified into the Measured, Indicated, or Inferred Mineral Resource categories on the basis of the search ellipse ranges obtained from the variography study, the observed continuity of the mineralization, the drill hole and channel sample density, and previous production experience with this deposit.

ROÇA GRANDE MINE

DESCRIPTION OF THE DATABASE

The drilling and sampling practices involve the initial delineation of the location of the various mineralized lenses using surface-based and underground-based drill holes at a nominal spacing of 25 m to 50 m. Underground-based drilling is used to delineate the RG1 and RG7 mineralized lenses only, as no underground development has been carried out on the RG2, RG3 and RG6 lenses. As development of the underground access progresses on the RG1 and RG7 lenses, a series of channel samples are taken in two locales (one set on the face and one set along the back) for each round. The average sample spacing along development drifts is five metres. Channel samples that were taken during excavation of the open pit mines on the RG2, RG3 and RG6 lenses were also included into the drill hole database.

Jaguar maintains an internal database which is used to store and manage all of the digital information for all of its operations. The drill hole and channel sample information for the Roça Grande Mine were extracted from this internal database into separate files for use in preparation of the Mineral Resource estimates.

The cut-off date for the channel sample assays in the drill hole database is March 31, 2015, while the cut-off date for the drill core sample assays in the drill hole database is June 30, 2015. No further diamond drilling has been carried out at the Roça Grande property, however, collection of channel sample information in support of limited production activities has continued through to early 2018. The drill hole and channel sample information were grouped into five sets to reflect the known mineralized lenses at Roça Grande. The drilling and sampling was carried out using the UTM Datum Córrego Alegre, Zone 23S grid coordinate system.

A summary of the drilling and channel sampling information is provided in Table 14-2.

TABLE 14-2 DESCRIPTION OF THE ROÇA GRANDE DATABASE AS AT AUGUST 24, 2015
Jaguar Mining Inc. – Caeté Operations

Data Type	Description
Collars, Drill Holes	649 (total 97,250 m)
Collars, Chip & Channel Samples	6,517 (total 74,041 m)
Survey, Drill Holes	23,694
Survey, Chip & Channel Samples	72,321
Lithology, Drill Holes	11,328
Lithology, Chip & Channel Samples	29,791
Assays, Drill Holes	33,327
Assays, Chip & Channel Samples	77,035

This drill hole information was modified slightly so as to be compatible with the format requirements of the MineSight v.7.60 mine planning software and was imported into that software package by Jaguar. A number of new tables were created during the estimation process to capture such information as the intersection information between the drill holes and the wireframe models, density readings, capped assay records, and composited assay records.

The database included a number of assay records which contained entries of negative values to represent intervals of no sampling, lost core, lost sample, or no core recovery, some of which are contained within the mineralized wireframes. Depending upon the specific local conditions, these null values can introduce an undesired positive bias upon the grade estimations. Jaguar therefore elected to pursue a conservative approach by inserting a very low gold value of 0.01 g/t Au for these intervals of null values. A total of 33,033 records were adjusted in this process.

RPA notes that the controls on the gold mineralization at the Roça Grande Mine are well understood and that the mineralized lenses are well drilled and well sampled. The drilling and sampling protocols employed by Jaguar permit the identification and delineation of the mineralized areas with confidence. The drilling and sampling practices are carried out to a high standard. RPA is of the opinion that the drill hole and sampling database is suitable for use in preparation of Mineral Resource estimates.

MINERALIZATION WIREFRAMES

The interpreted 3D wireframe models of the gold mineralization have been created using the geology information and assay values from surface- and underground-based drill holes, and channel sample data as described in RPA (2015). Wireframe models of the gold distribution for the three Orebodies were created using the LeapFrog Geo version 2.0.2 software packages. No changes have been made to the mineralized wireframes for the year-end 2017 Mineral Resource estimate.

The wireframe limits were drawn using a cut-off grade of 0.50 g/t Au and a nominal minimum width of one metre. The purpose of the minimum width criteria was to attempt to identify any areas of high grade mineralization that could be candidates for extraction using highly selective underground mining methods. A minimum width criteria was subsequently applied to the Mineral Resource reporting criteria by using a minimum grade times thickness product of 3 gram-metres. The wireframe models were clipped to the original, pre-mining topography surface.

The main underground production of the mine has been from the RG1 and RG7 lenses. The RG1 lens is a shallowly dipping stratiform deposit that is generally associated with an iron formation assemblage comprised of carbonate, oxide and sulphide facies iron formation, chert, clastic sediments (including graphitic argillite), and fine grained tuffaceous units. The average strike of the lens is to azimuth 075° and the average dip is 40° to 50° to the south (Figure 14-1). The RG7 lens in contrast is composed largely of vein quartz which is oriented sub-parallel to the RG1 mineralized lens. The mineralization in the RG1 lens has been outlined along a strike length of approximately 500 m and along the down-dip direction of approximately 1,400 m to 1,500 m (approximately 400 m vertically below surface). The deposit is accessed by a ramp and a system of levels that provides access to a depth of approximately 230 m vertically from surface. The bottom of the ramp is currently located approximately 300 m vertically from surface. The mineralization in the RG1 lens has been defined by drilling below the lowest working level and good potential remains for discovering additional mineralization along the down-plunge projection with additional drilling.

Separate surfaces were also created to represent the bottom of the weathered material as well as representing the bottom of the transitional weathering zone. It is important to note that due to the presence of deeply penetrating fault structures, the bottom of the transition zone has been interpreted to penetrate deeper near the RG1 and RG2 lenses. This interpretation is supported by the rock quality information gained in the Vale railroad tunnel, the ramp access from the RG1 mine to the RG2 lens, and from drill holes that tested the RG2 lens which were collared from the RG2 decline.

TOPOGRAPHY AND EXCAVATION MODELS

A topographic surface of the mine area that is current as of May 2015 was used to code the block model for those portions of the RG2, RG3, and RG6 lenses that have been excavated by means of open pit mining methods. A wireframe model of the completed underground excavations as of December 31, 2017 was prepared and was used to code the block model for the portions of the RG1 and RG7 lenses that have been mined out as of that date.

The mineralization at the Roça Grande Mine is accessed by means of a ramp with a collar elevation at approximately 1,110 MASL. The bottom of the ramp is currently at an elevation of approximately 915 MASL. Due to the dip of the mineralization, the chief mining method that has been employed to-date has been a drift-and-fill method. In all, five levels have been developed to access the RG1 and RG7 lenses (Table 14-3). An attempt was made to access the RG2 lens by deepening and extending the RG1 ramp, however the attempt was stopped due to poor ground conditions. A second ramp has been excavated with the portal located in the hangingwall of the RG2 lens at an elevation of approximately 1,035 MASL. The bottom of this ramp is currently at an elevation of approximately 945 MASL, and has not penetrated the RG2 mineralized lens.

A railroad tunnel has been constructed by Vale in support of its mining operations in the area. A digital model of this tunnel has been prepared which shows that it penetrates the mineralized wireframe of the RG2 lens (Figure 14-1).

TABLE 14-3 DESCRIPTION OF THE ROÇA GRANDE MINE LEVELS
Jaguar Mining Inc. – Caeté Operations

Level	Floor Elevation (m)
Crown Pillar	1,220
1	1,160
2	1,120
3	1,044
4	970
5	922

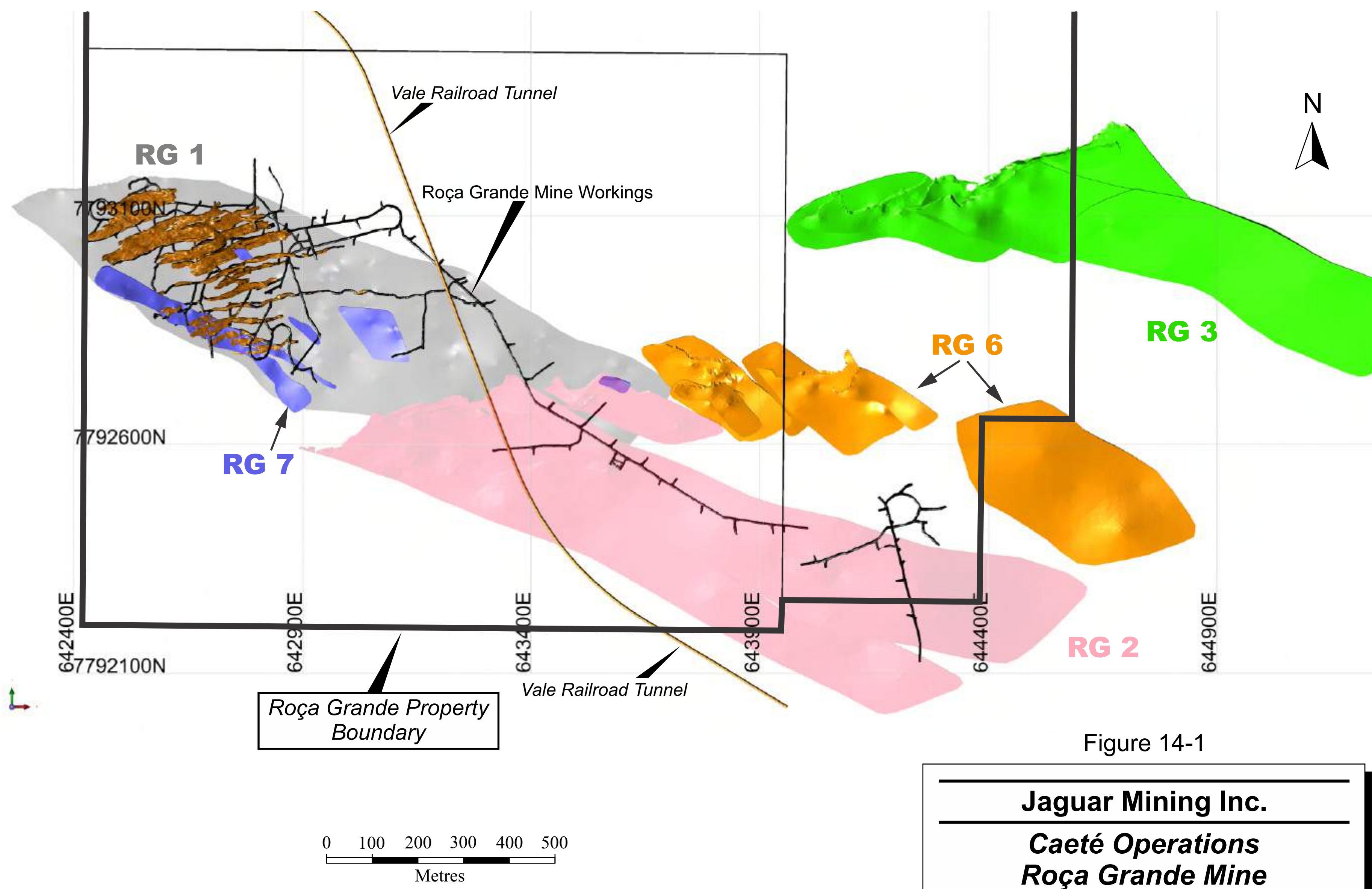


Figure 14-1

Jaguar Mining Inc.

Caeté Operations
Roça Grande Mine
Minas Gerais State, Brazil
Plan View of the Mineralized Wireframes and Underground Workings

April 2018

Source: RPA, 2016.

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SAMPLE STATISTICS AND GRADE CAPPING

The mineralization wireframe models were used to code the drill hole database and identify the raw assay samples that are contained within the mineralized wireframes. These samples were extracted from the database into their respective domains, and then subjected to statistical analyses by means of histograms, probability plots, and decile analyses. A total of 65,964 samples were contained within the mineralized wireframes, of which approximately 3% comprised samples with null values which had been replaced by near-zero values. The sample statistics are summarized in Table 14-4. Selected histograms are provided in Figures 14-2 and 14-3.

On the basis of its review of the assay statistics, RPA believes that a capping value of 30 g/t Au is appropriate for the RG1 and RG6 mineralized lenses and a capping value of 50 g/t Au is appropriate for the RG2, RG3, and RG7 mineralized lenses. The selection of capping values can be re-examined in light of grade reconciliation information and adjusted accordingly as necessary.

TABLE 14-4 DESCRIPTIVE STATISTICS OF THE RAW ASSAYS, ROÇA GRANDE MINE
Jaguar Mining Inc. – Caeté Operations

	RG1		RG7		RG2		RG3		RG6	
Item	**Au Raw**	**Au Cap**	**Au Raw**	**Au Cap**	**Au Raw**	**Au Cap**	**Au Raw**	**Au Cap**	**Au Raw**	**Au Cap**
Length-Weighted Mean	2.17	2.16	5.40	4.99	3.04	2.98	1.51	1.48	1.66	1.59
Median	0.89	0.89	0.34	0.34	1.17	1.17	0.36	0.36	0.31	0.31
Mode	0.01	0.01	0.01	0.01	0.01	0.01	0.07	0.07	0.01	0.01
Standard Deviation	3.60	3.41	13.84	9.46	6.14	5.44	4.15	3.62	4.71	3.49
CV	1.66	1.58	2.56	1.90	2.02	1.83	2.76	2.44	2.85	2.20
Sample Variance	12.96	11.64	191.45	89.57	37.67	29.61	17.24	13.09	22.23	12.21
Minimum	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Maximum	88.17	30.00	385.00	50.00	165.03	50.00	196.00	50.00	115.80	30.00
Count	22,834	22,834	3,060	3,060	13,386	13,386	22,307	22,307	2,299	2,299
Capping Value	30		50		50		50		30	

FIGURE 14-2 FREQUENCY HISTOGRAM OF THE RAW ASSAYS, RG1 WIREFRAME

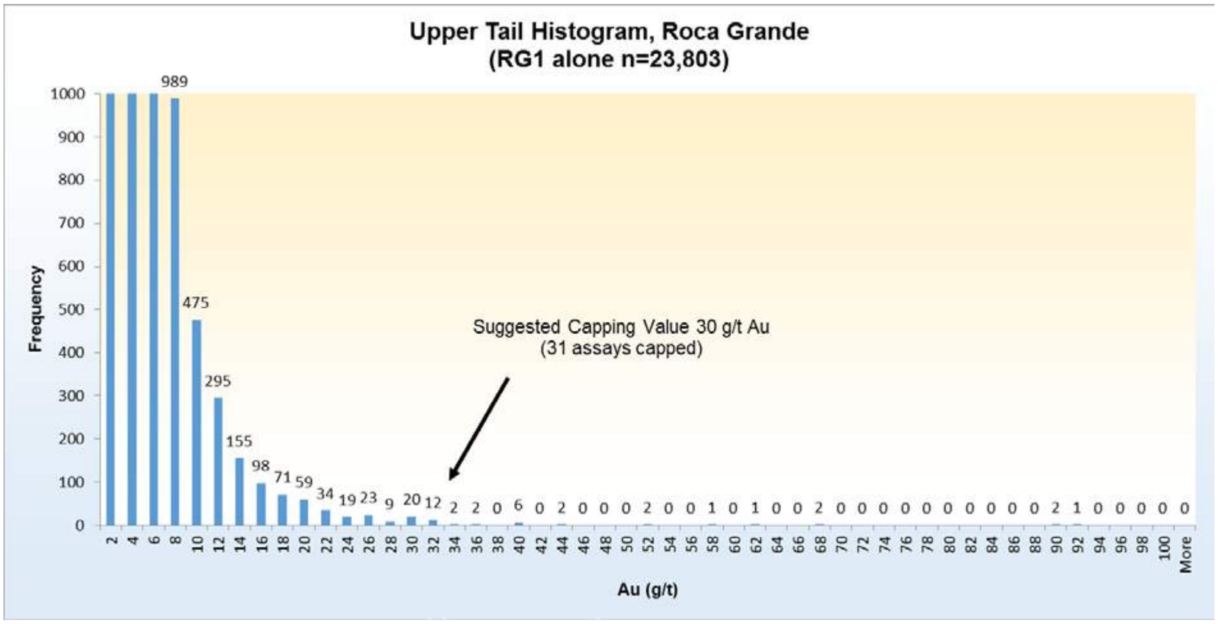
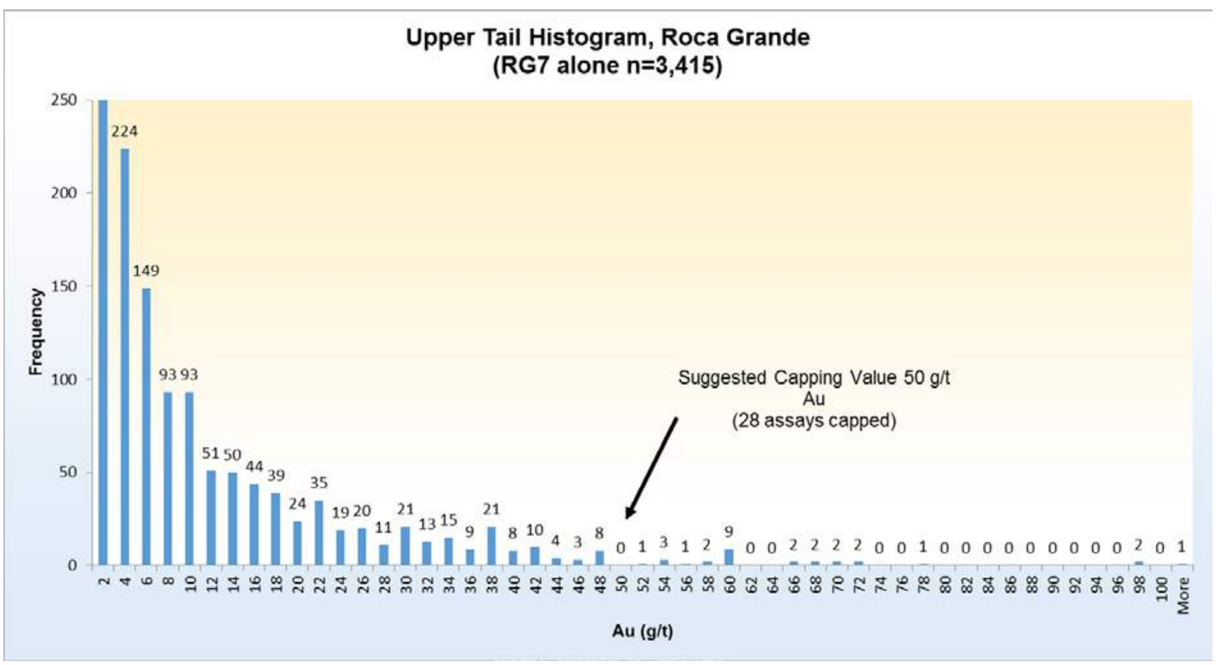


FIGURE 14-3 FREQUENCY HISTOGRAM OF THE RAW ASSAYS, RG7 WIREFRAME



COMPOSITING METHODS

The selection of an appropriate composite length began with examination of the descriptive statistics of the raw assay samples and preparation of sample length frequency histograms. Consideration was also given to the size of the blocks in the model.

Many of the sample lengths in the various mineralized wireframes were found to be approximately one metre in length. Consequently, on the basis of the available information, RPA believes that a composite length of one metre for all samples is reasonable. All samples contained within the mineralized wireframes were composited to a nominal one metre length using the best-fit function of the MineSight software package. The descriptive statistics of the composite samples are provided in Table 14-5.

TABLE 14-5 DESCRIPTIVE STATISTICS OF THE COMPOSITE SAMPLES, ROÇA GRANDE MINE
Jaguar Mining Inc. – Caeté Operations

Item	RG1		RG7		RG2		RG3		RG6	
	Comp Raw	Comp Cap	Comp Raw	Comp Cap	Comp Raw	Comp Cap	Comp Raw	Comp Cap	Comp Raw	Comp Cap
Length-Weighted Mean	2.17	2.16	5.39	4.99	3.04	2.98	1.51	1.49	1.66	1.59
Median	1.15	1.15	0.98	0.98	1.19	1.19	0.45	0.45	0.40	0.40
Mode	0.01	0.01	0.01	0.01	0.07	0.07	0.07	0.07	0.01	0.01
Standard Deviation	3.07	2.94	14.33	8.96	6.06	5.33	3.84	3.32	3.82	3.06
CV	1.41	1.36	2.66	1.80	1.99	1.79	2.55	2.23	2.31	1.92
Sample Variance	9.39	8.67	205.3	80.25	36.75	28.38	14.76	10.99	14.62	9.35
Minimum	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Maximum	59.99	30.00	385.0	50.00	165.03	50.00	196.00	50.00	89.33	30.00
Count	11,500	11,500	1,541	1,541	7,091	7,091	12,103	12,103	1,817	1,817

BULK DENSITY

Jaguar has initiated a program of bulk density measurements on the various lithologies that are present at the Roça Grande Mine in 2015. The density measurements were made on representative samples of drill core from intervals of iron formation and quartz vein that are located within the mineralized wireframes, along with measurements carried out on samples of adjoining waste rock units. The density measurements were carried out at the Jaguar analytical laboratory located at the Roça Grande Mine using the water displacement method. In all, a total of 261 density measurements were completed in 2015. A summary of the results is presented in Table 14-6. A density of 2.00 tonnes/m^3 was applied to all material located above the oxidized surface and a density of 2.25 tonnes/m^3 was applied to all material located in the transition zone between the oxidized and fresh rock surfaces.

TABLE 14-6 SUMMARY OF 2015 DENSITY MEASUREMENTS, ROÇA GRANDE MINE
Jaguar Mining Inc. – Caeté Operations

Item	Iron Formation RG1, 2, 3, & 6	Quartz Vein RG7	Waste Rock
Mean	2.87	2.75	2.73
Median	2.86	2.73	2.73
Mode	2.75	N/A	2.60
Standard Deviation	0.29	0.17	0.28
Sample Variance	0.08	0.03	0.08
Minimum	2.24	2.45	2.00
Maximum	4.13	3.19	3.88
Count	164	13	84

TREND ANALYSIS

As an aid in carrying out variography studies of the continuity of the gold grades in the mineralized domain models, a short study to examine the overall trends was carried out. For this exercise, a data file was prepared that contained the gold values for each drill hole and channel sample contained within the respective mineralized domain model. The resulting gold grade times thickness (GT) product were digitally contoured using the LeapFrog software package and the results are shown in Figures 14-4 and 14-5.

It can be seen that an overall down-plunge of the gold grade-thickness product is present for the RG1 and RG2 orebodies. The trends further along the down-plunge projection are not as well defined, as the density of drill hole and channel sample information is lower in these areas.

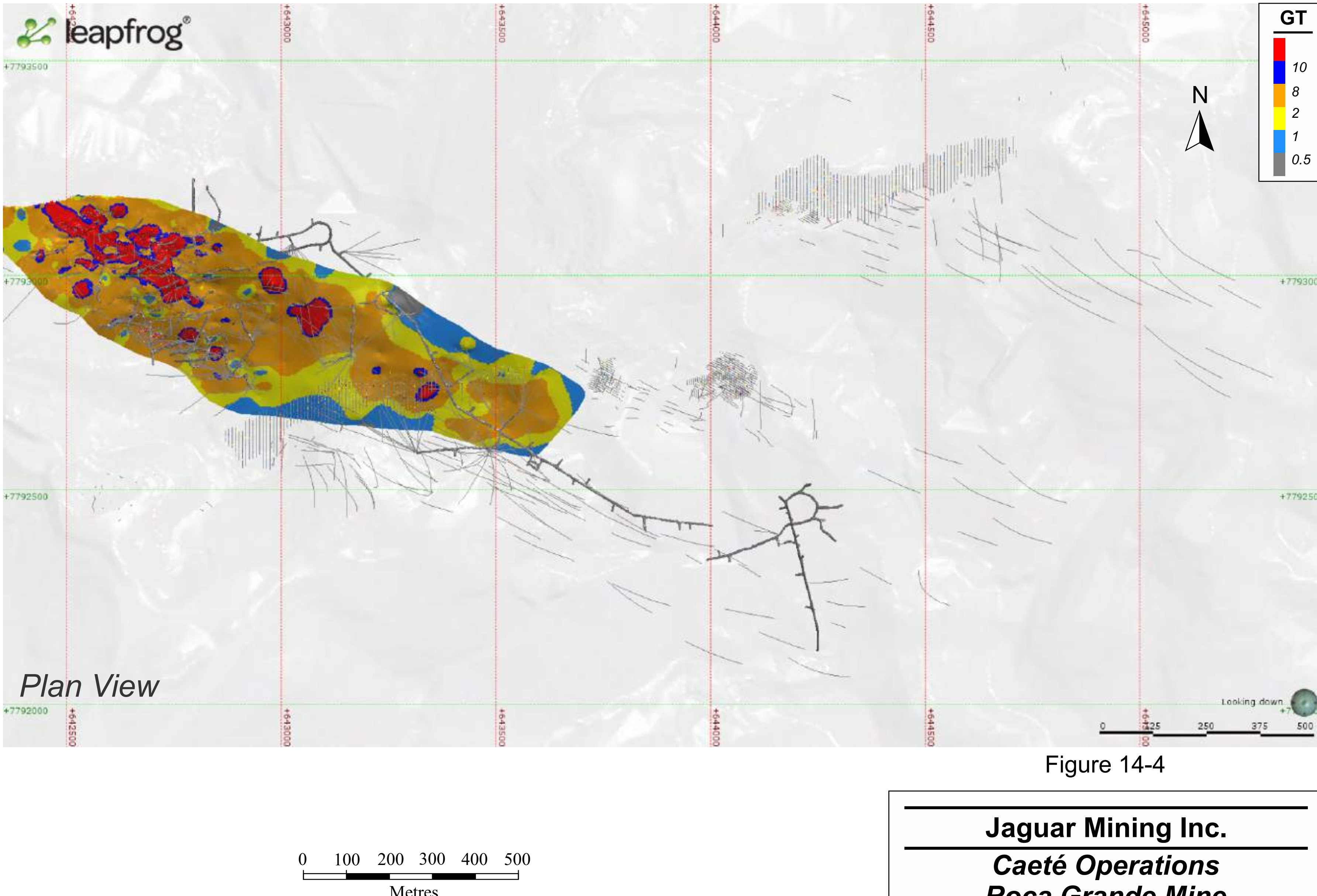


Figure 14-4

Jaguar Mining Inc.

Caeté Operations

Roca Grande Mine

Mina Gerais State, Brazil

Grade x Thickness Product

RG1 Orebody

April 2018

Source: RPA, 2016.

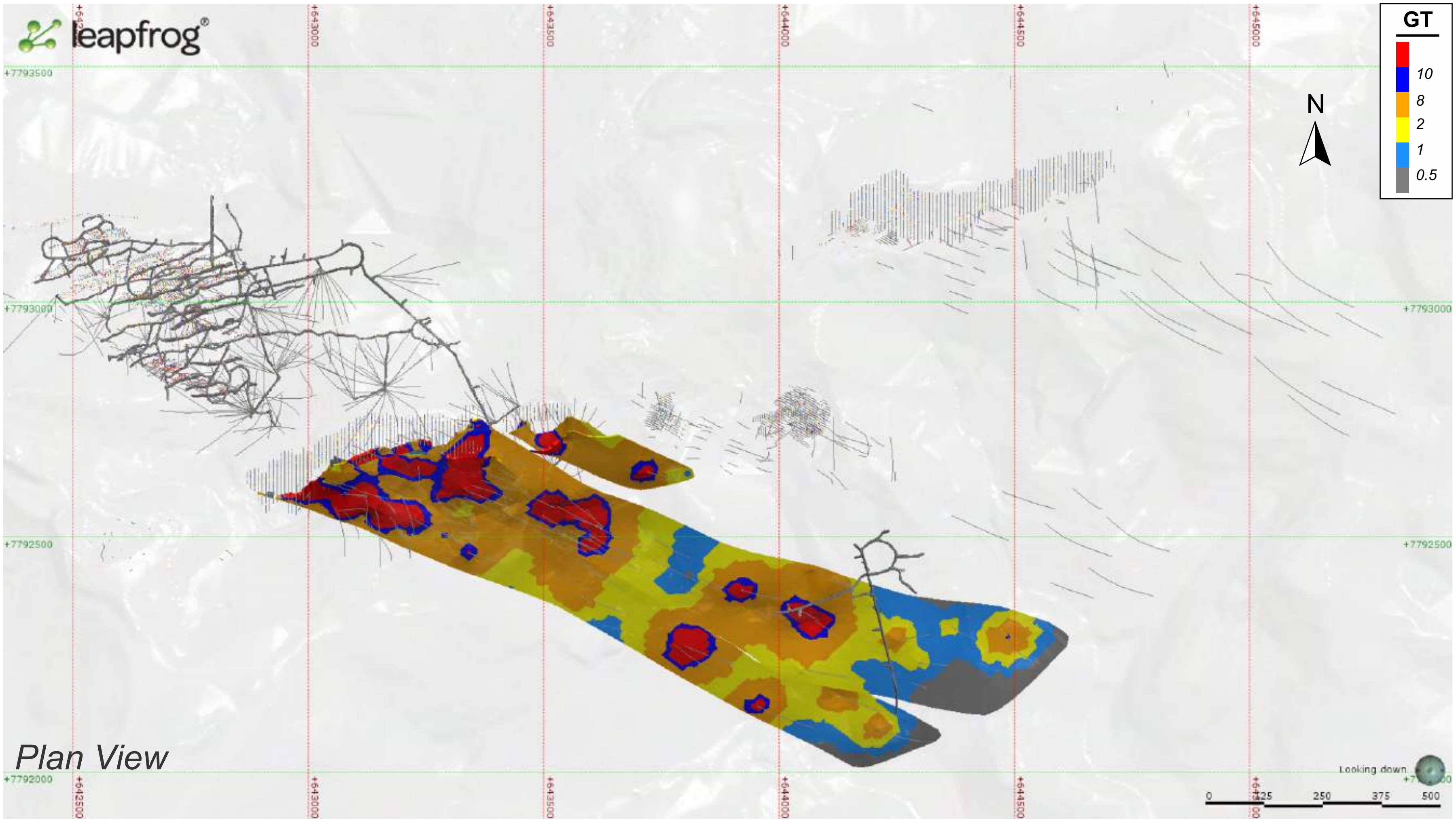


Figure 14-5

0 100 200 300 400 500
Metres

Jaguar Mining Inc.

Caeté Operations
Roca Grande Mine
Mina Gerais State, Brazil
Grade x Thickness Product
RG2 Orebody

April 2018

Source: RPA, 2016.

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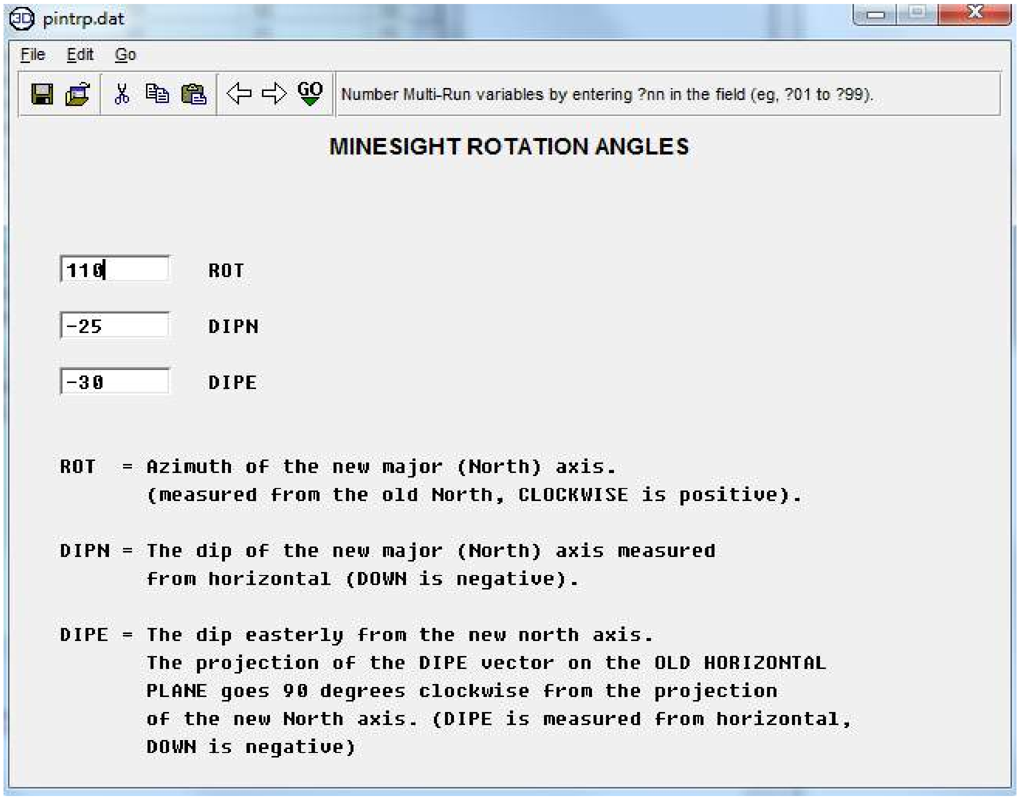
VARIOGRAPHY

Jaguar began its analysis of the spatial continuity by constructing separate downhole and omnidirectional variograms using the capped, composited sample data for each of the Orebodies, with the objective of determining an appropriate value for the global nugget (C0). The analysis proceeded with the evaluation of any anisotropies that may be present in the data, which resulted in successful variograms with reasonably good model fits. The variography package of the MineSight software package was used to construct the variograms. A summary of the variogram parameters derived for each of the five Orebodies is presented in Table 14-7. The MineSight software package uses the azimuth/dip/plunge rotation convention (Figure 14-6).

TABLE 14-7 SUMMARY OF VARIOGRAPHY AND INTERPOLATION PARAMETERS, ROÇA GRANDE MINE
Jaguar Mining Inc. – Caeté Operations

Orebody	RG1	RG2	RG3	RG6	RG7
Variography Parameters:					
Nugget	3	15	5	2	30
Sill, Major Axis C1	4.00 (8 m)	8.00 (22 m)	3.50 (12 m)	4.00 (6 m)	30.00 (5 m)
Sill, Major Axis C2	1.44 (26 m)	6.20 (38 m)	2.57 (20 m)	1.34 (26 m)	14.40 (20 m)
Model type	Spherical	Spherical	Spherical	Spherical	Spherical
Orientation	110/-25/-30	110/-20/-40	110/-25/-40	130/-37/-40	115/-35/-30
Anisotropy Ratio (Major/Semi-Major)	3.25	1.27	1.67	1.30	1.67
Anisotropy Ratio (Major/Minor)	4.33	7.60	3.33	2.60	3.33
Minimum Number of Samples	3	3	3	3	3
Maximum Number of Samples	8	8	8	8	8
Max. No. of Samples per Hole	2	2	2	2	2
Max. No. of Samples per Quadrant	2	2	2	2	2
Search Ellipse Axis Ranges (m):					
Main	26	38	20	26	20
Secondary	8	30	12	20	12
Minor	6	5	6	10	6

FIGURE 14-6 MINESIGHT ROTATION ANGLES



BLOCK MODEL CONSTRUCTION

The block model was constructed using the MineSight version 7.60 software package and comprised an array of 2 m x 2 m x 2 m sized blocks using a partial percentage attribute. The model is oriented parallel to the coordinate grid system (i.e., no rotation or tilt). The selection of the block size for this model was based upon the block sizes previously employed at the mine. The block model origin, dimensions, and attribute list are provided in Table 14-8. A number of attributes were created to store such information as rock code, material densities, estimated gold grades, mineral resource classification, mined out material and the like (Table 14-9).

Gold grades were estimated into the blocks by means of ID^3, OK, and nearest neighbour (NN) interpolation algorithms using the capped composited sample information as of the data cut-off dates stated above. A total of four interpolation passes were carried out using distances derived from the variography results and the search ellipse parameters presented above.

In general, “hard” domain boundaries were used along the contacts of the mineralized domain models. Only data contained within the respective wireframe model were allowed to be used to estimate the grades of the blocks within the wireframe in question, and only those blocks within the wireframe limits were allowed to receive grade estimates.

TABLE 14-8 BLOCK MODEL DEFINITION, ROÇA GRANDE MINE
Jaguar Mining Inc. – Caeté Operations

Type	Y (Northing)	X (Easting)	Z (Elevation)
Minimum Coordinates (m)	7,791,900	642,200	500
Maximum Coordinates (m)	7,793,700	645,600	1,500
Block Size (m)	2	2	2
Rotation (°)	0.000	0.000	0.000

TABLE 14-9 BLOCK MODEL ATTRIBUTES, ROÇA GRANDE MINE
Jaguar Mining Inc. – Caeté Operations

Attribute Name	Type	Decimals	Description
au_id3_c	Real	2	Gold by Inverse Distance, Power 3, Capped Composites
au_nn_c	Real	2	Gold by Nearest Neighbour, Capped Composites
au_ok_c	Real	2	Gold by Ordinary Kriging, Capped Composites
avd	Real	2	Average Distance of Informing Samples
class	Integer	-	Mineral Resource Classification (1=measured, 2=indicated, 3=inferred)
density	Real	2	Material Density
dm	Real	-	Code for Property Boundary (1=with RG claim boundary)
mined	Real	-	Mined Out (-1=Remaining Material, 1=Mined Out)
nsmp	Real	-	Number of Informing Samples
ore_pct	Real	2	Percent of Block Inside the Wireframe
rock	Integer	-	Material / Wireframe Code
rsrc	Integer	-	Resource/Reserve Reporting Flag (by wireframe)
topo_pct	Real	-	Percent of Block Below Topography Surface
vokc	Real	2	Kriging Variance using Uncapped Composites
weath	Real	-	Weathering Code

Those portions of the mineralized wireframes that sit beyond the Roça Grande Mine property boundary were appropriately coded in the block model and omitted from the Mineral Resource statement.

BLOCK MODEL VALIDATION

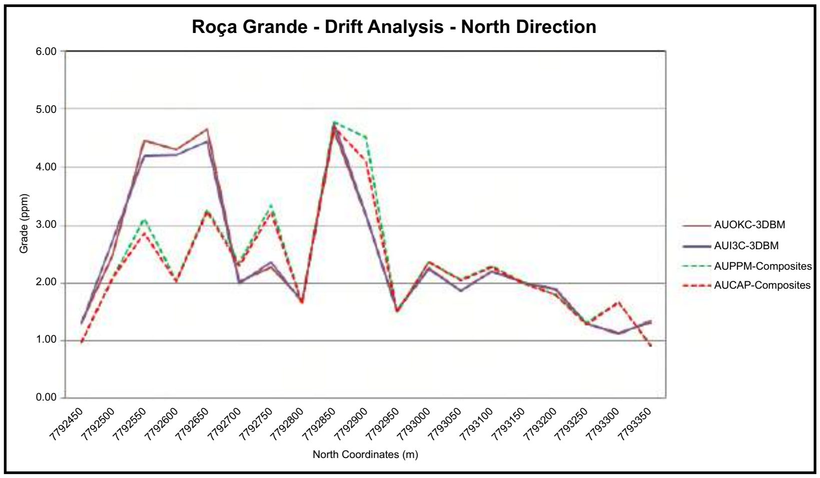
Block model validation exercises consisted of comparing the volume of the coded blocks in the block model against the volume report of the respective wireframe models as a high level check that the block model has been correctly coded for each of the wireframes (Table 14-10). In general, the block model volumes compared well with the wireframe volumes for all domains except for the RG07 domain where the block model has been coded with slightly less volume.

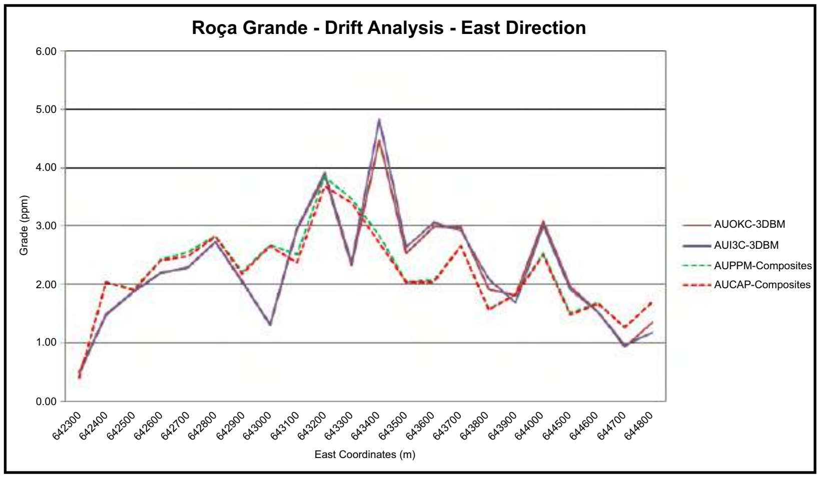
A second validation exercise consisted of comparing the descriptive statistics from the capped composited samples against the block model estimated gold grades. In general, the block estimated mean grades compared well with the average of the capped, composited samples for all domains except for the RG07 domain. RPA attributes this difference to the clustering of the composite samples (channel samples) and to the relatively small number of composite samples that are used to interpolate some of the sub-domains for this wireframe. Swath plots for northing, easting and elevations are presented in Figure 14-7.

A third validation exercise consisted of comparing the mill production statistics with the predicted volumes of diluted and recovered tonnes and grade from the block model for the period of January 2014 to March 2015 (Table 14-11 and Figure 14-8). The reconciliation results are showing that there is a good correlation between the block model predicted tonnages and grades against the mill production statistics for the period examined.

TABLE 14-10 BLOCK MODEL VALIDATION RESULTS, ROÇA GRANDE MINE
Jaguar Mining Inc. – Caeté Operations

Orebody	RG01	RG02	RG03	RG06	RG07
		Block Model:			
Volume (m^3)	1,147,049	1,482,279	1,661,810	833,864	75,097
Tonnes	3,220,488	3,387,371	4,184,455	1,919,079	195,646
Grade (g/t Au)	1.73	2.85	1.48	1.51	6.15
		Wireframe:			
Volume (m^3)	1,170,422	1,512,104	1,694,232	850,421	79,948
Difference (BM-Wf)	-23,373	-29,825	-32,422	-16,557	-4,851
% Difference	-2%	-2%	-2%	-2%	-6%
		Composites:			
Grade (g/t Au)	2.04	2.92	1.46	1.36	4.13





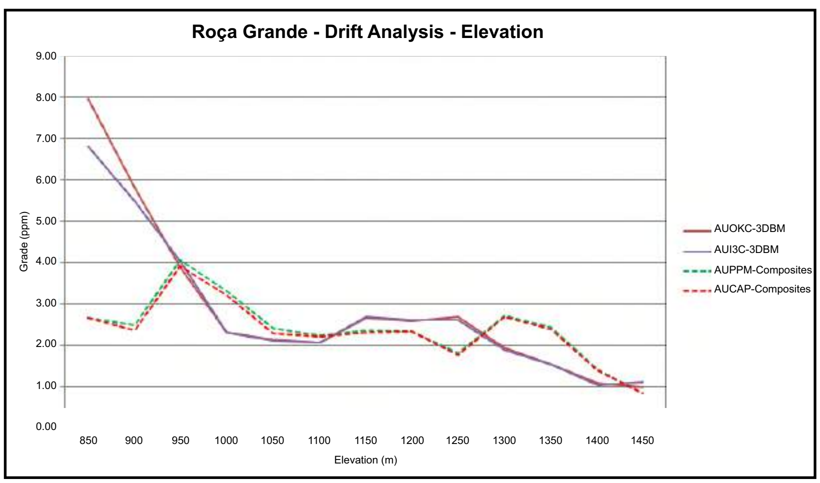


Figure 14-7

Jaguar Mining Inc.

Caeté Operations
Roça Grande Mine
Minas Gerais State, Brazil
Swath Plots

April 2018

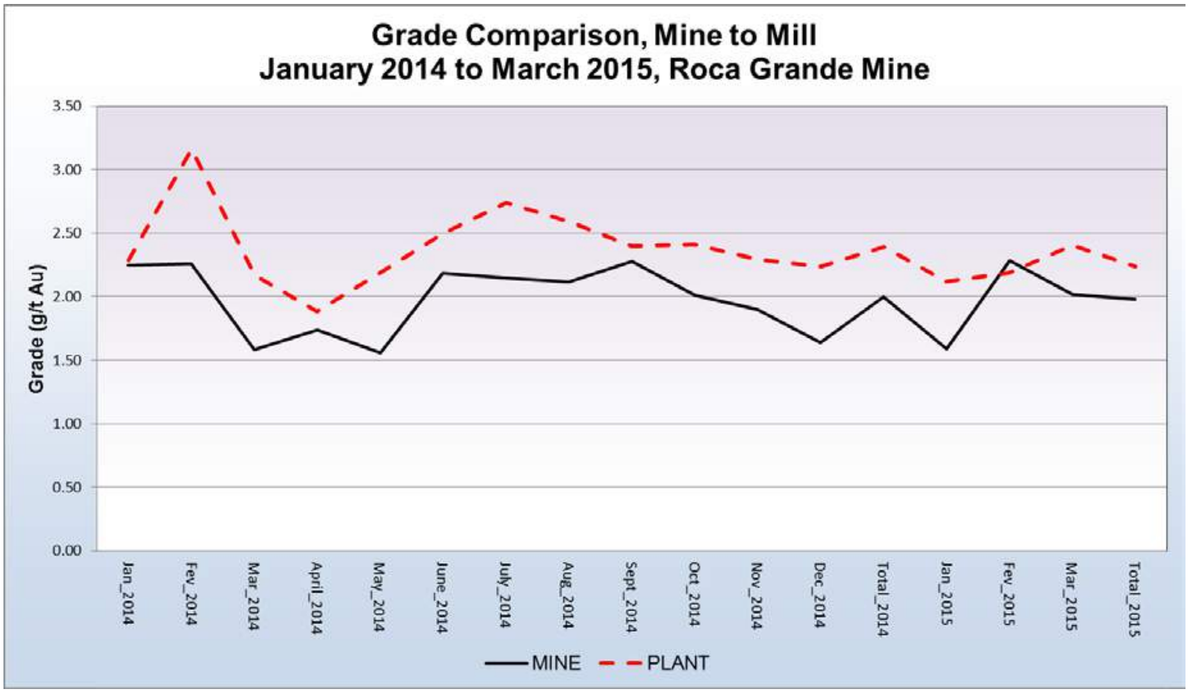
Source: RPA, 2016.

TABLE 14-11 MINE TO MILL (F1') COMPARISON, JANUARY 2014 TO MARCH 2015 – ROÇA GRANDE MINE
Jaguar Mining Inc. – Caeté Operations

	MINE PRODUCTION			PLANT PRODUCTION		
Month	**Recovered Tonnes**	**Recovered Grade (g/t Au)**	**Oz Au**	**Mill Feed Tonnes**	**Mill Feed Grade (g/t Au)**	**Oz Au**
2014						
January	16,407	2.25	1,186	14,916	2.29	1,096
February	11,007	2.26	801	12,030	3.16	1,223
March	12,390	1.59	632	14,155	2.17	988
April	16,426	1.74	920	15,563	1.88	942
May	10,079	1.56	506	12,032	2.19	846
June	14,624	2.18	1,027	12,617	2.50	1,015
July	15,416	2.15	1,063	14,702	2.74	1,295
August	15,045	2.12	1,024	14,174	2.59	1,180
September	17,511	2.28	1,284	15,589	2.40	1,203
October	14,650	2.01	948	16,296	2.41	1,263
November	14,182	1.90	867	14,857	2.30	1,097
December	11,566	1.64	611	15,043	2.24	1,083
Total - 2014	**169,303**	**2.00**	**10,868**	**171,975**	**2.39**	**13,231**
2015						
January	10,293	1.59	527	11,426	2.12	778
February	11,676	2.29	859	12,755	2.19	897
March	11,111	2.02	721	11,742	2.41	909
Total - 2015	**33,080**	**1.98**	**2,106**	**35,923**	**2.24**	**2,585**

	Variance			Factors		
Period	**Tonnes**	**Grade**	**Oz Au**	**Tonnes**	**Grade**	**Oz**
2014	+2,672	+0.39	+2,363	1.02	1.12	1.22
M-T-D 2015	+2,843	+0.26	+479	1.09	1.13	1.23

FIGURE 14-8 MINE TO MILL GRADE COMPARISON, JANUARY 2014 TO MARCH 2015, ROÇA GRANDE MINE



MINERAL RESOURCE CLASSIFICATION

The Mineral Resources in this report were estimated in accordance with the definitions contained in CIM (2014).

The mineralized material for each wireframe was classified into the Measured, Indicated, or Inferred Mineral Resource category on the basis of the search ellipse ranges obtained from the variography study, the demonstrated continuity of the gold mineralization, the density of drill hole and chip sample information, and the presence of underground access.

On the basis of these criteria, Measured Mineral Resources comprise that material that has been estimated using Pass #1 that is located between developed levels. Indicated Mineral Resources comprise that material that has been estimated using Pass #2, and Inferred Mineral Resources comprise that material that has been estimated using Pass #3. Clipping polygons were used in a final stage of the classification process to ensure continuity and consistency of the classified blocks in the model. Jaguar employs an additional block model code to denote those areas considered to display good exploration potential for use in the decision process.

RESPONSIBILITY FOR THE ESTIMATE

The estimate of the Mineral Resources for the Roça Grande Mine presented in this report was prepared in 2015 by Mr. Helbert Taylor Vieira, Senior Geologist with Jaguar under the supervision of Mr. Jean-Marc Lopez, Director – Mine Geology with Jaguar, and Mr. Reno Pressacco, M.Sc.(A), P.Geo., Principal Geologist with RPA. The 2015 estimate was depleted for production to December 31, 2017 by Mr. Vieira. Mr. Pressacco is a Qualified Person as defined in NI 43-101, is independent of Jaguar, and takes responsibility for this Mineral Resource estimate.

CUT-OFF GRADE

A cut-off grade of 1.46 g/t Au is used for reporting of Mineral Resources. This cut-off grade was arrived at using a gold price of US$1,400/oz, average gold recovery of 88%, and 2014 actual cost data for the Roça Grande Mine.

MINERAL RESOURCE ESTIMATE

There are no Mineral Reserves present at the Roça Grande Mine for the current reporting period. The Mineral Resource reports were prepared by creating clipping polygons that were used to ensure that the requirement for spatial continuity is met. The reporting polygons were prepared in either plan or longitudinal views, as appropriate, and were applied to the block model prepared in 2015. They were drawn to include continuous volumes of blocks whose estimated grades were above the stated cut-off grade, were located completely within the boundaries of Jaguar's mineral rights holdings at the Roça Grande Mine, possessed a grade times thickness product of at least 3 gram-metres, and were not located in mined out areas as of December 31, 2017. These resource polygons were also used to exclude isolated blocks with limited to no spatial continuity but containing grades above the nominated cut-off. These resource polygons were used to appropriately code the block model and were used to report the Mineral Resources.

The Mineral Resources are presented in Tables 14-12 and 14-13. A plan view of the Mineral Resources for the RG 01 and RG02 domains is presented in Figures 14-9 and 14-10.

TABLE 14-12 SUMMARY OF MINERAL RESOURCES AS OF DECEMBER 31, 2017 – ROÇA GRANDE MINE
Jaguar Mining Inc. – Caeté Operations

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Measured	190	2.14	13
Indicated	897	2.91	84
Sub-total M&I	**1,087**	**2.77**	**97**
Inferred	1,759	3.48	197

Notes:
1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at a cut-off grade of 1.46 g/t Au.
3. Mineral Resources are estimated using a long-term gold price of US$1,400 per ounce.
4. Mineral Resources are estimated using an average long-term foreign exchange rate of 3.8 Brazilian Reais: 1 US Dollar.
5. Mineral Resources are stated by depletion of the 2015 grade-block model with excavation volumes as of December 31, 2017.
6. A minimum mining width of approximately 2 m was used.
7. Gold grades are estimated by the inverse distance cubed interpolation algorithm using capped composite samples.
8. No Mineral Reserves are currently present at the Roça Grande Mine.
9. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
10. Numbers may not add due to rounding.

TABLE 14-13 SUMMARY OF MINERAL RESOURCES BY OREBODY AS OF DECEMBER 31, 2017 – ROÇA GRANDE MINE
Jaguar Mining Inc. – Caeté Operations

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
	Orebody RG01:		
Measured	160	2.24	12
Indicated	383	2.08	26
Sub-total M&I	**543**	**2.13**	**37**
Inferred	300	2.92	28
	Orebody RG02:		
Measured	-	-	-
Indicated	215	4.07	28
Sub-total M&I	**215**	**4.07**	**28**
Inferred	756	3.91	95
	Orebody RG03:		
Measured	-	-	-
Indicated	74	1.66	4
Sub-total M&I	**74**	**1.66**	**4**
Inferred	365	2.58	30
	Orebody RG06:		
Measured	29	1.63	2
Indicated	185	3.15	19
Sub-total M&I	**214**	**2.94**	**20**

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Inferred	287	2.88	27
	Orebody RG07:		
Measured	-	-	-
Indicated	39	5.75	7
Sub-total M&I	**39**	**5.75**	**7**
Inferred	51	10.34	17
	Total Roça Grande Mine:		
Total, Measured	190	2.14	13
Total, Indicated	897	2.91	84
Total Measured & Indicated	**1,087**	**2.77**	**97**
Total, Inferred	1,759	3.48	197

Notes:
1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at a cut-off grade of 1.46 g/t Au.
3. Mineral Resources are estimated using a long-term gold price of US$1,400 per ounce.
4. Mineral Resources are estimated using an average long-term foreign exchange rate of 3.8 Brazilian Reais: 1 US Dollar.
5. Mineral Resources are stated by depletion of the 2015 grade-block model with excavation volumes as of December 31, 2017.
6. A minimum mining width of approximately 2 m was used.
7. Gold grades are estimated by the inverse distance cubed interpolation algorithm using capped composite samples.
8. No Mineral Reserves are currently present at the Roça Grande Mine.
9. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
10. Numbers may not add due to rounding.

Categories of Inferred, Indicated, and Measured Mineral Resources are recognized in order of increasing geological confidence. However, Mineral Resources are not equivalent to Mineral Reserves and do not have demonstrated economic viability. There can be no assurance that Mineral Resources in a lower category may be converted to a higher category, or that Mineral Resources may be converted to Mineral Reserves. Inferred Mineral Resources cannot be converted into Mineral Reserves as the ability to assess geological continuity is not sufficient to demonstrate economic viability. Due to the uncertainty which may attach to Inferred Mineral Resources, there is no assurance that Inferred Mineral Resources will be upgraded to Indicated or Measured Mineral Resources with sufficient geological continuity to constitute Proven and Probable Mineral Reserves as a result of continued exploration.

There is a degree of uncertainty to the estimation of Mineral Reserves and Mineral Resources and corresponding grades being mined or dedicated to future production. The estimating of mineralization is a subjective process and the accuracy of estimates is a function of the accuracy, quantity, and quality of available data, the accuracy of statistical computations, and the assumptions used and judgments made in interpreting engineering and geological information. There is significant uncertainty in any Mineral Resource/Mineral Reserve estimate, and the actual deposits encountered and the economic viability of mining a deposit may differ significantly from these estimates. Until Mineral Reserves or Mineral Resources are actually mined and processed, the quantity of Mineral Resources/Mineral Reserves and their respective grades must be considered as estimates only. In addition, the quantity of Mineral Reserves and Mineral Resources may vary depending on, among other things, metal prices.

Any material changes in quantity of Mineral Reserves, Mineral Resources, grade, or stripping ratio may affect the economic viability of a property. In addition, there can be no assurance that recoveries in small scale laboratory tests will be duplicated in larger scale tests under on-site conditions or during production. Fluctuation in metal or commodity prices, results of additional drilling, metallurgical testing, receipt of new information, and production and the evaluation of mine plans subsequent to the date of any estimate may require revision of such estimate. The volume and grade of reserves mined and processed and recovery rates may not be the same as currently anticipated. Estimates may have to be re-estimated based on changes in mineral prices or further exploration or development activity. This could materially and adversely affect estimates of the volume or grade of mineralization, estimated recovery rates, or other important factors that influence estimates. Any material reductions in estimates of Mineral Reserves and Mineral Resources, or the ability to extract these mineral reserves, could have a material adverse effect on the Jaguar's financial condition, results of operations, and future cash flows.

RPA has considered the Mineral Resource estimates in light of known environmental, permitting, legal, title, taxation, socio-economic, marketing, political, and other relevant issues and has no reason to believe at this time that the Mineral Resources will be materially affected by these items. Studies are currently in progress that examine whether the Mineral Resources may be materially affected by mining, infrastructure, or other relevant factors.

It is RPA's opinion that the Roça Grande Mineral Resource estimates were prepared in a professional and diligent manner by qualified professionals and that the estimates comply with CIM (2014) definitions.

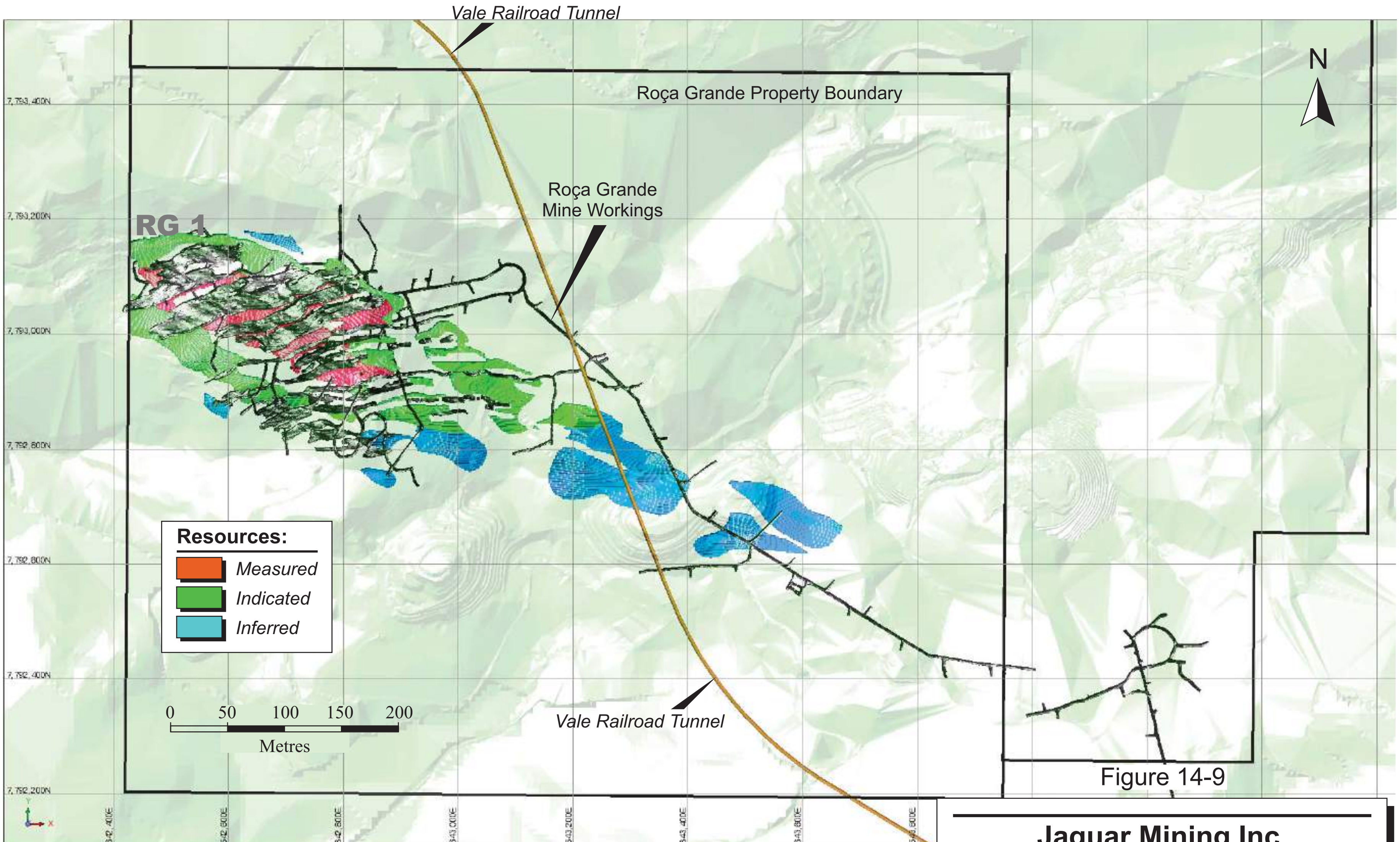


Figure 14-9

Jaguar Mining Inc.

Caeté Operations
Roça Grande Mine
Minas Gerais State, Brazil

Plan View of the RG01 Mineral Resources

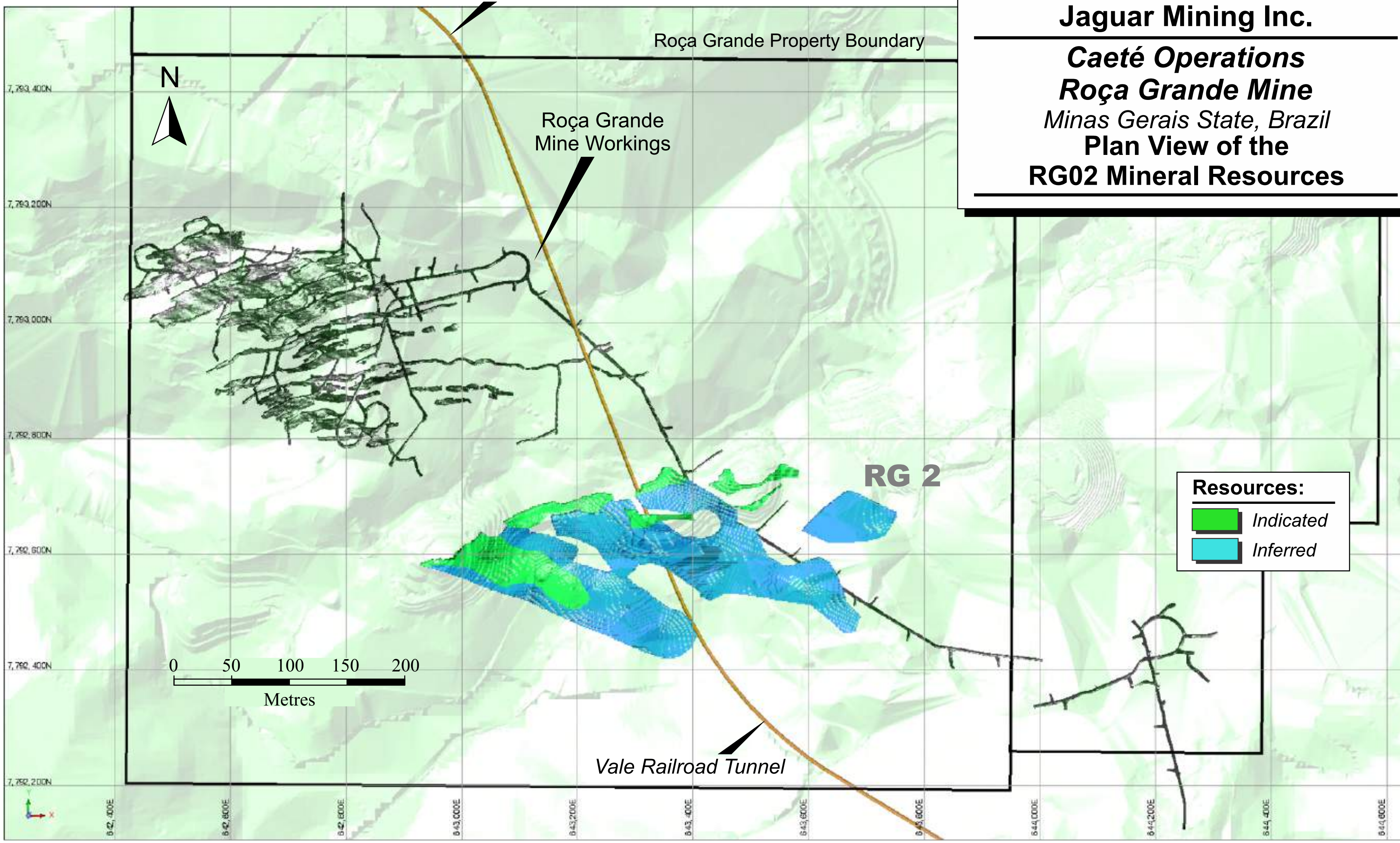
April 2018

Source: RPA, 2018.

Figure 14-10

Jaguar Mining Inc.

Caeté Operations
Roça Grande Mine
Minas Gerais State, Brazil
Plan View of the
RG02 Mineral Resources



April 2018

Source: RPA, 2018.

PILAR MINE

DESCRIPTION OF THE DATABASE

Current drilling and sampling practices employed by Jaguar involve the initial delineation of the location of the various mineralized lenses using surface-based and underground-based drill holes at a nominal spacing of 25 m to 50 m. Underground-based drilling is used to delineate the down-plunge projection of the Pilar mineralization. As development of the underground access progresses, a series of channel samples are taken in two locales (one set on the face and one set along the back) for each round. The average sample spacing along development drifts is five metres.

Jaguar maintains an internal database which is used to store and manage all of the digital information for all of its operations. The drill hole database contains drill hole and channel sample information that is coded according to the following naming conventions:

AUGER	Auger holes (Open pit mine)
CN	Channel samples
FSB	In-fill & definition drill holes
GSW	SW orebody drift drill holes
PILF	Surface-based exploration drill holes (prior owners)
PMS	Surface-based exploration drill holes (completed by Jaguar)
PPL	Exploration and in-fill drill holes (underground)
RC	Reverse circulation drill holes
SBF	Face channel samples
SBJ	Jumbo drill holes

The drill hole and channel sample information for the Pilar Mine was extracted from this internal database into separate files for use in preparation of the Mineral Resource estimates. This drill hole information was modified slightly so as to be compatible with the format requirements of the MineSight v.7.60 mine planning software and was imported into that software package by Jaguar.

As part of the Mine Expansion program, Jaguar completed a total of 69 underground drill holes with a total length of 10,220 m in 2016 and a total of 60 underground drill holes with a total length of 11,780 m in 2017 with the objective of searching for the location of the down-plunge extensions of the known mineralized bodies, principally the BA, BF, and BF II lenses.

The cut-off date for the assays in the drill hole database is November 28, 2017. The drilling was carried out using the UTM Datum Córrego Alegre, Zone 23S grid coordinate system.

A summary of the drilling and channel sampling information is provided in Table 14-14. The location of the drill hole and channel samples is presented in Figure 14-11.

TABLE 14-14 DESCRIPTION OF THE PILAR MINE DATABASE AS AT NOVEMBER 28, 2017
Jaguar Mining Inc. – Caeté Operations

Data Type	Number of Records
Collars (1,366 Drill Holes & 19,838 Chip/Channel Samples)	21,204
Survey	102,937
Lithology	88,602
Assays	136,133
Composites	48,508
Weathering code	55,801
Density	2,051

The database included a number of assay records which contained entries of negative values to represent intervals of no sampling, lost core, lost sample, or no core recovery. Some of these negative values are contained within the mineralized wireframes. Depending upon the specific local conditions, these null values can introduce an undesired positive bias upon the grade estimations. Jaguar therefore elected to pursue a conservative approach by inserting a very low gold value of 0.01 g/t Au for these intervals of null values. A total of 6,903 records were adjusted in this process.

RPA recommends that a program of re-sampling be undertaken for those un-sampled intervals located within the mineralized wireframe boundaries if sufficient drill core is available.

RPA recommends that the drill hole sampling protocols be updated to ensure that full sampling coverage is obtained for all mineralized zones as part of the normal-course logging and sampling procedures. Preparation of current drill hole plans and sections by the logging geologist in either physical or digital format that show the location of the current drill hole relative to the remainder of the drilling information will greatly assist in achieving this goal.

Detailed review by the on-site geologists of the drill hole database revealed the presence of a number of drill holes and channel samples for which the collar, deviation, or downhole distances presented a poor correlation with the body of the surrounding drill hole and channel sample information. These drill holes and channel samples were identified by a unique flag code (Flag = 0) in the assay and composite tables and were not used in either preparation of the mineralization wireframes or estimation of the block gold grades. This flag code was also used to identify drill holes for which assay information became available after the crystallization date of the database. Overall, 516 drill holes and channel samples were affected. Visual review of their location reveals that they are more or less evenly distributed throughout the extent of the drill hole and channel sample coverage.

RPA notes that the understanding of the host stratigraphy, structural setting, and controls on the gold mineralization at the Pilar Mine by the mine geologists is increasing. This understanding permits an increased degree of success when designing exploration and in-fill drilling programs. The drilling and sampling protocols employed by Jaguar permit the identification and delineation of the mineralized areas with confidence. The drilling and sampling practices are carried out to an acceptable standard. RPA is of the opinion that the drill hole and sampling database is suitable for use in preparation of Mineral Resource estimates.

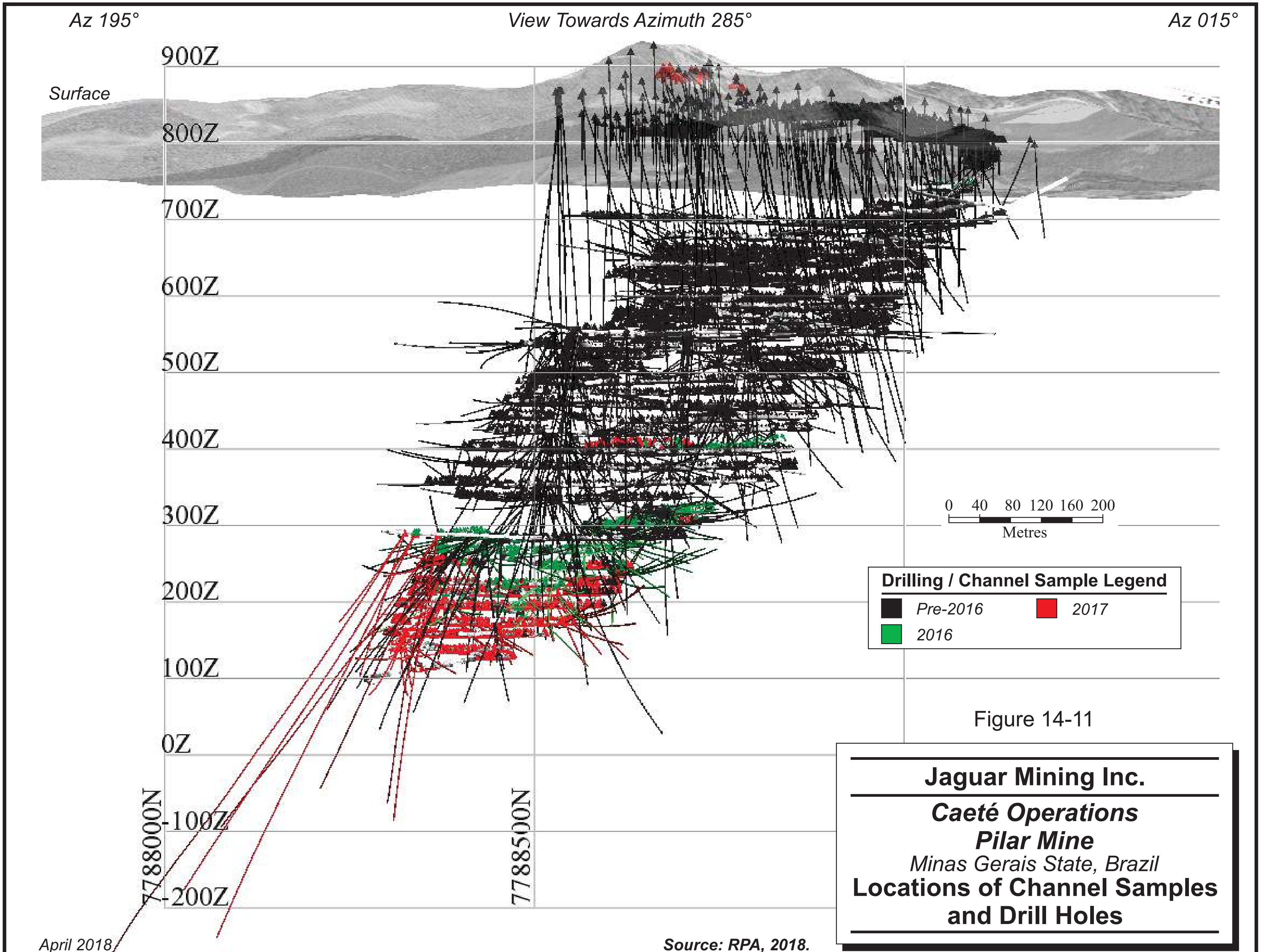


Figure 14-11

Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil

Locations of Channel Samples and Drill Holes

April 2018

Source: RPA, 2018.

RPA

www.rpacan.com

GEOLOGY AND MINERALIZATION WIREFRAMES

A series of three-dimensional (3D) wireframe models were constructed of the main lithological units, along with models of the known major faults that are present in the vicinity of the mine workings. This lithological and structural modelling work has been successful in demonstrating that the main marker iron formation unit changes in its form from a shape similar to a broad, open fold at surface, to a series of compact, tightly folded structural slices at depth (Figures 14-12, 14-13, and 14-14). Jaguar staff are planning to initiate a mine-site program of detailed lithological and structural mapping program whose goal will be to improve the understanding of the nature and distribution of the main lithological units and structures, and their relationship to the mineralization.

The interpreted 3D wireframe models of the gold mineralization were created using the geology information and assay values from surface- and underground-based drill holes, and channel sample data as available. Wireframe models of the gold distribution for the various mineralized lenses were created using the LeapFrog Geo version 2.0.2 software packages.

The wireframe limits were drawn using a cut-off grade of 0.50 g/t Au and a nominal minimum width of 2.0 m initially in cross sectional view for the BA, BF, BF II, LPA, and Torre mineralized zones. These cross sections were then sliced horizontally at two metre intervals, edited, and re-joined together to generate smooth outlines of the mineralized envelopes. The mineralized wireframe envelopes for all other mineralized zones were created using the LeapFrog version 4.2.3 software package. The wireframe models were clipped to the original, pre-mining topography surface. In total, eight separate orebodies were modeled which reflect the current understanding of the spatial distribution and structural controls on the gold mineralization (Figure 14-15). Each of the domains was identified in the block model by a series of integer codes (Table 14-15). Of the eight orebodies, the BA, BF and BF II account for the majority of the contained metal in the block model.

RPA recommends that the cut-off grade strategy used for preparation of the mineralization wireframes be amended to better reflect the potentially economic in-situ gold grades. As a minimum, the mineralization wireframes should be created using a cut-off grade similar to the reporting cut-off grade. By adoption of this strategy, it is anticipated that a lower number of below cut-off grade composite samples will be used in estimation of the block gold grades.

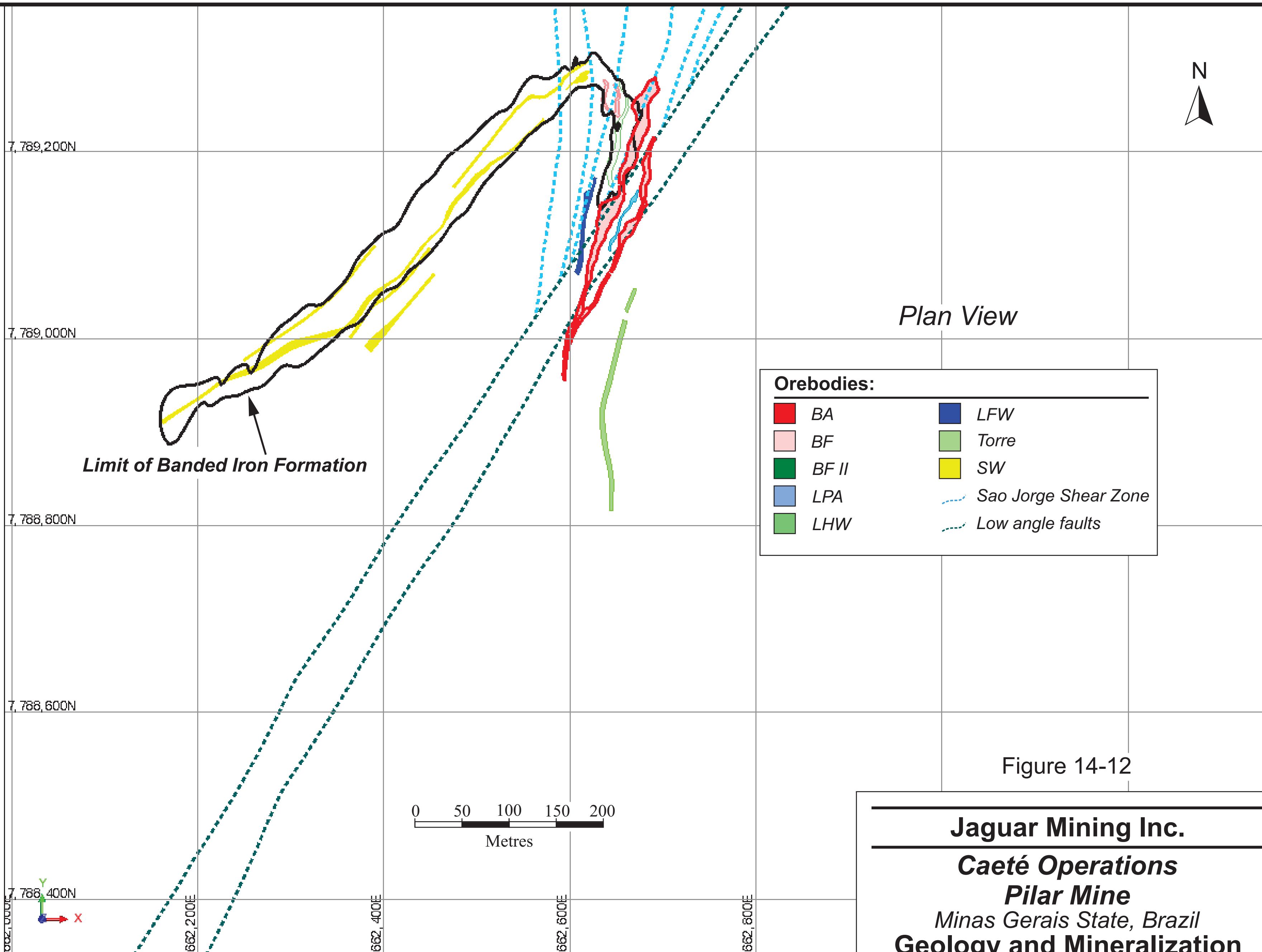


Figure 14-12

Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil
Geology and Mineralization
Level 1 (691 m)

April 2018

Source: RPA, 2018.

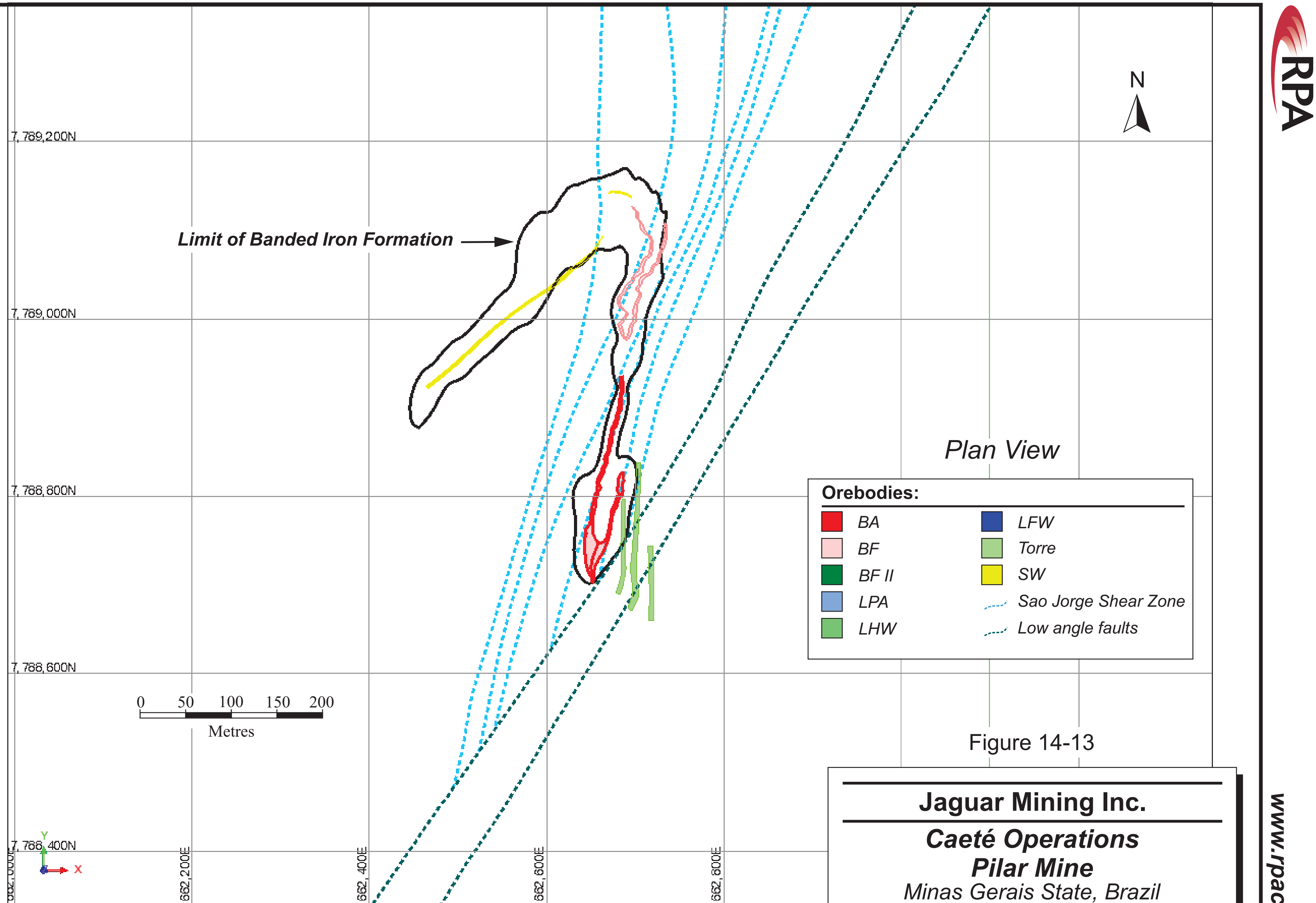


Figure 14-13

Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil
Geology and Mineralization
Level 4 (el 485m)

April 2018

Source: RPA, 2018.

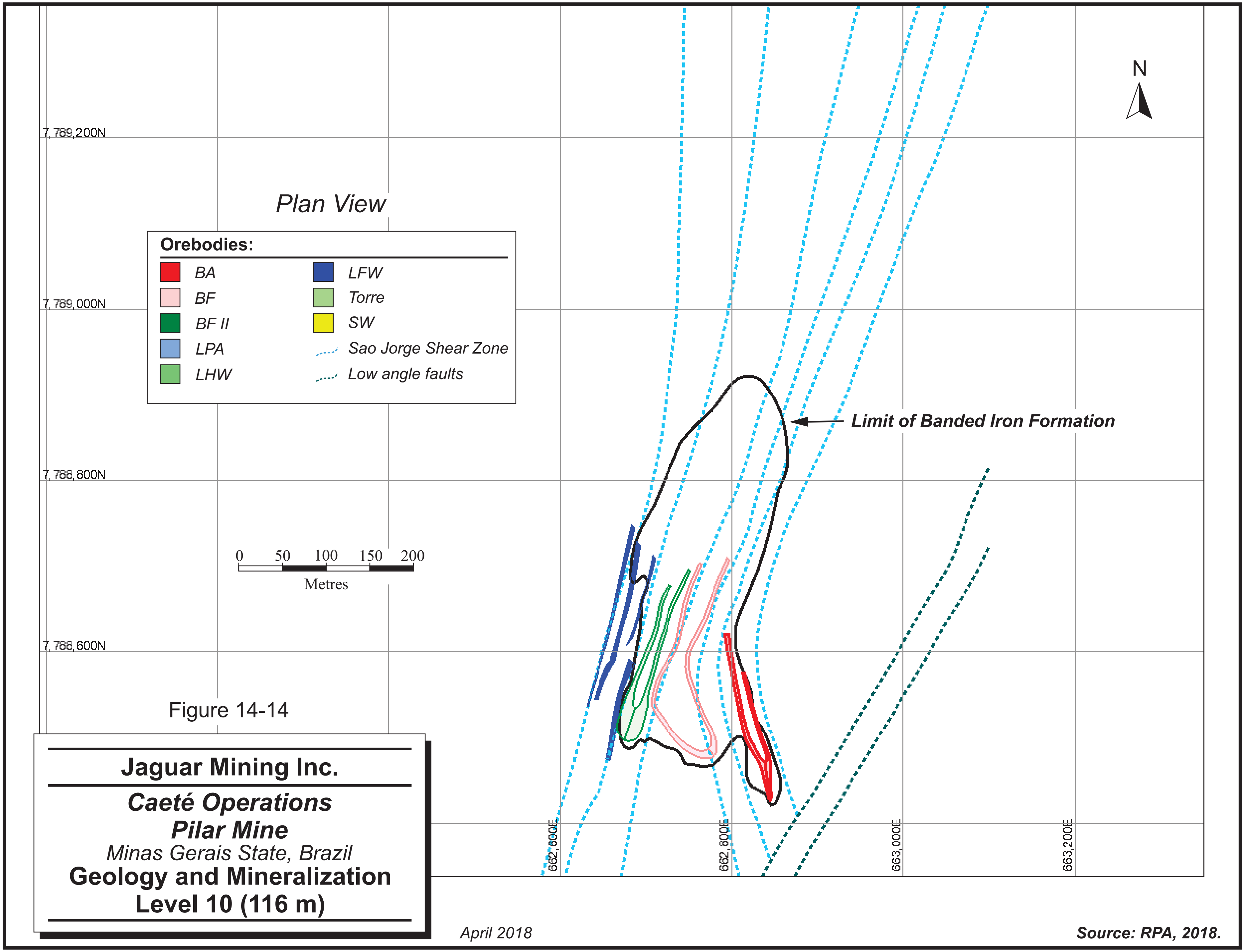


Figure 14-14

Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil
Geology and Mineralization
Level 10 (116 m)

April 2018

Source: RPA, 2018.

TABLE 14-15 DESCRIPTION OF THE MINERALIZED DOMAINS, PILAR MINE
Jaguar Mining Inc. – Caeté Operations

Domain	Block Model Codes
BA (110)	111 - FW 112 - HW
BF (120)	121 – FW 122 – HW
BF II (130)	131 – FW 132 – HW
LFW	201 to 207
LPA	301 to 304
LHW	401 to 403
Torre (formerly Orebody C)	501 to 505
SW Orebody	601 to 605

All of the mineralized lenses, with the exception of the SW Orebody, are located to the east of the São Jorge fault. In general terms, the mineralized lenses are sub-parallel to each other, have an average strike of 015°, and dip steeply to the east with an average dip of 65°. The available drill hole information suggests that the dip of the mineralized zones may begin to flatten to approximately 45° below the 120 m elevation (Figure 14-13). Three of the mineralized zones (BA, BF, and BF II) have been identified by drill hole and channel sample data to be isoclinally folded, with fold axes that plunge at approximately -40° to the southwest (approximately azimuth 210° to 225°). Many of the remaining mineralized zones (LFW, LPA, LHW, and the C Orebody) are interpreted to be more tabular in overall form. The LPA zone resides in the axial plane of the folded BF zone and thus provides evidence for multiple ages of gold mineralization.

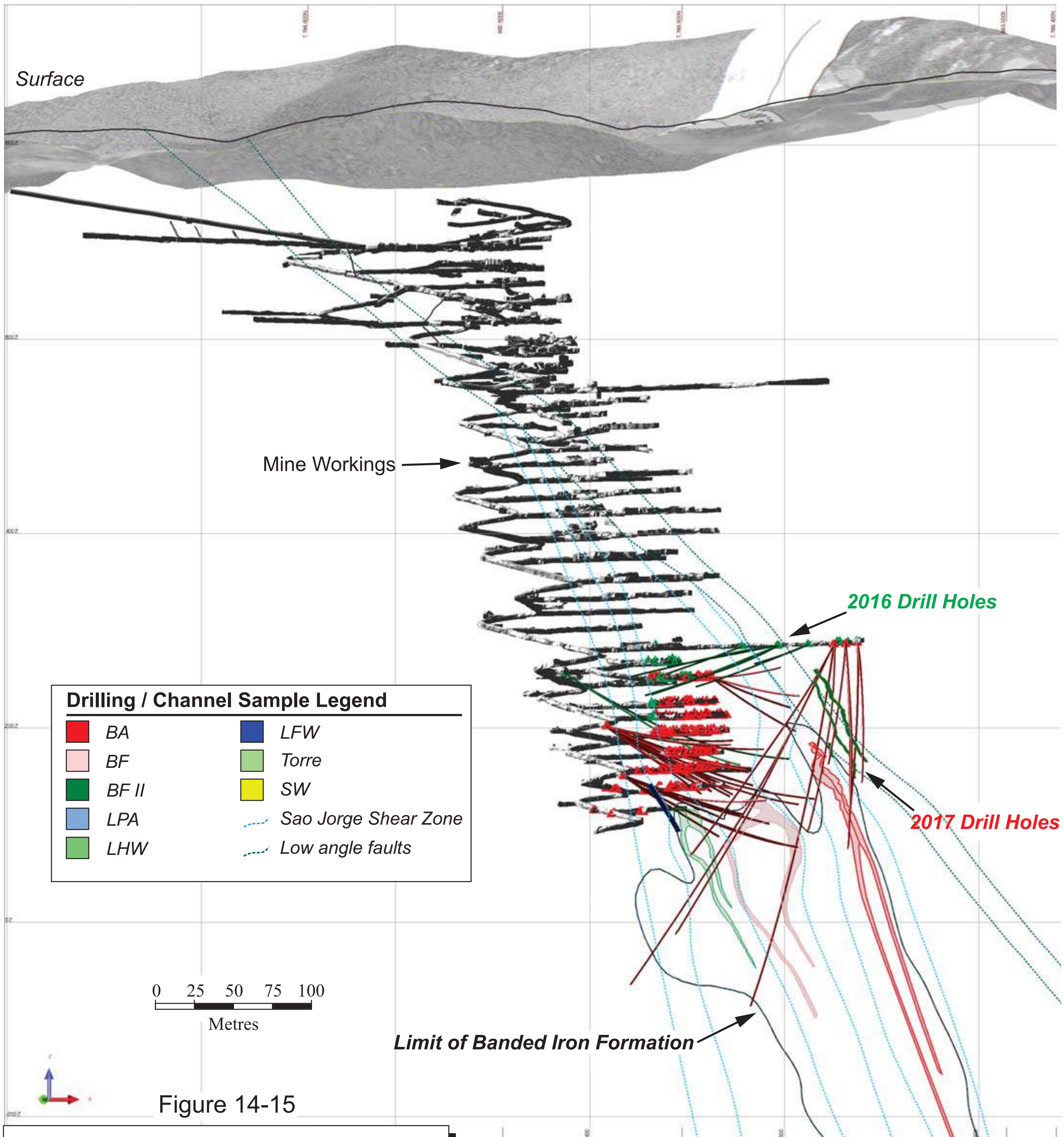


Figure 14-15

Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil
Cross Section of the Geology and Mineralized Wireframes

April 2018

Source: RPA, 2018.

TOPOGRAPHY AND EXCAVATION MODELS

A topographic surface of the Pilar Mine area that is current as of May 2015 was used to code the block model. The topographic map includes two open pit mines that are now depleted. A wireframe model of the completed underground excavations as of December 31, 2017 was prepared and was used to code the block model for the portions of the mineralized zones that have been mined out.

The mineralization at the Pilar Mine is accessed by means of a ramp with a collar elevation at approximately 750 MASL. The bottom of the ramp is currently at an elevation of approximately 96 MASL. There are two mining methods currently in use. The cut and fill method is utilized in the narrower sections of the deposit whereas the long hole method is used in the thicker areas. In all, ten levels have been developed to access the various mineralized zones (Table 14-16).

TABLE 14-16 DESCRIPTION OF THE PILAR MINE LEVELS
Jaguar Mining Inc. – Caeté Operations

Level	Bottom Elevation (m)
1	690.5
2	615.2
3	544
4	485
5	417.3
6	330.5
7	263.5
8	220.3
9	168.6
10	114.7
11 (planned)	59
12 (planned)	4
13 (planned)	-50
14 (planned)	-104
15 (planned)	-158
16 (planned)	-212
17 (planned)	-266
18 (planned)	-320
19 (planned)	-400

SAMPLE STATISTICS AND GRADE CAPPING

The mineralization wireframe models were used to code the drill hole database and identify the raw assay samples that are contained within the mineralized wireframes. These samples were extracted from the database into their respective domains, and then subjected to statistical analyses by means of histograms, probability plots, and decile analyses. A total of 51,416 samples were contained within the mineralized wireframes. The sample statistics are summarized in Table 14-17. Selected histograms are provided in Figures 14-16 to 14-18.

On the basis of its review of the assay statistics, RPA believes that a capping value of 10 g/t Au is appropriate for the LHW lenses, 20 g/t Au for the LFW, LPA and SW Orebody lenses, 30 g/t Au for the BF II and Torre Orebody lenses, and 60 g/t Au for the BA and BF mineralized lenses. The selection of capping values can be re-examined in light of grade reconciliation information and adjusted accordingly as necessary.

TABLE 14-17 DESCRIPTIVE STATISTICS OF THE RAW ASSAYS, PILAR MINE
Jaguar Mining Inc. – Caeté Operations

Item	BA		BF		BF II		LFW	
	Au Raw	Au Cap	Au Raw	Au Cap	Au Raw	Au Cap	Au Raw	Au Cap
Length-Weighted Mean	3.16	3.14	3.11	3.09	4.44	4.20	0.94	0.91
Median	0.98	0.98	0.78	0.78	1.64	1.64	0.65	0.65
Mode	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Standard Deviation	6.88	6.71	7.30	7.04	8.60	7.12	3.44	2.87
CV	2.18	2.14	2.35	2.28	1.94	1.69	3.67	3.16
Sample Variance	47.35	45.05	53.33	49.57	73.97	50.63	11.85	8.21
Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum	109.00	60.00	115.17	60.00	159.65	30.00	53.65	20.00
Count	18,047	18,047	14,307	14,307	5,681	5,681	3,212	3,212
Capping Value		60		60		30		20

Item	LPA		LHW		Torre		SW	
	Au Raw	Au Cap	Au Raw	Au Cap	Au Raw	Au Cap	Au Raw	Au Cap
Length-Weighted Mean	2.23	2.12	1.69	1.47	1.22	1.15	1.43	1.36
Median	0.85	0.85	0.82	0.82	0.77	0.77	0.56	0.56
Mode	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Standard Deviation	5.17	4.14	4.79	2.55	6.29	4.87	4.31	3.59
CV	2.32	1.95	2.83	1.73	5.15	4.24	3.01	2.64
Sample Variance	26.70	17.13	22.94	6.49	39.56	23.67	18.58	12.88
Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Item	LPA		LHW		Torre		SW	
	Au Raw	Au Cap	Au Raw	Au Cap	Au Raw	Au Cap	Au Raw	Au Cap
Maximum	90.33	20.00	116.00	10.00	128.33	30.00	56.92	20.00
Count	2,257	2,257	1,830	1,830	3,750	3,750	2,332	2,332
Capping Value		20		10		30		20

FIGURE 14-16 FREQUENCY HISTOGRAM OF THE RAW ASSAYS CONTAINED WITHIN THE BA MINERALIZED WIREFRAME

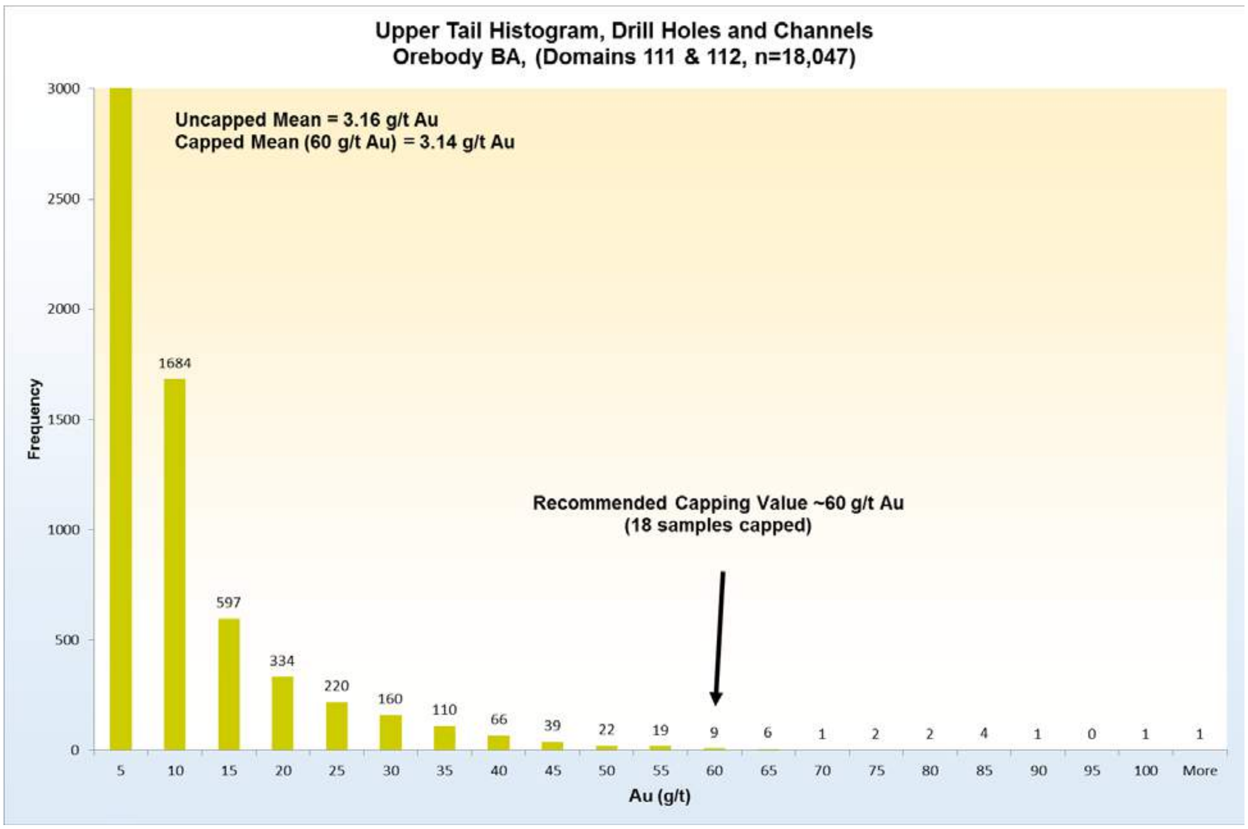


FIGURE 14-17 FREQUENCY HISTOGRAM OF THE RAW ASSAYS CONTAINED WITHIN THE BF MINERALIZED WIREFRAME

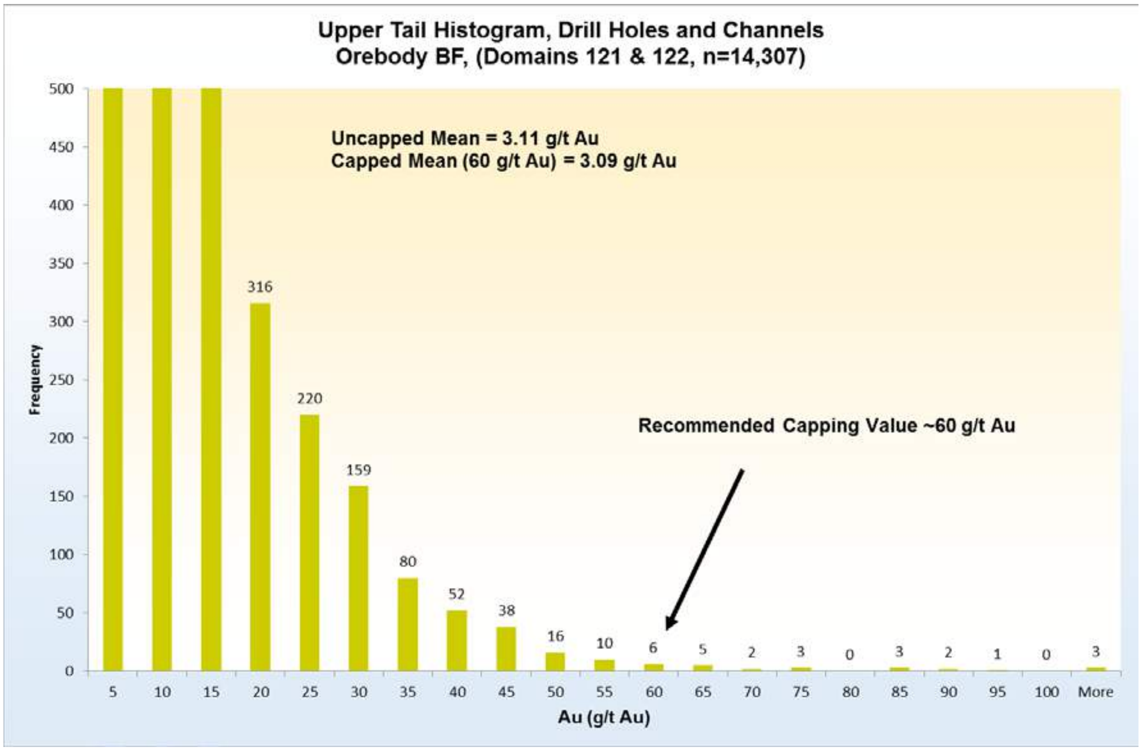
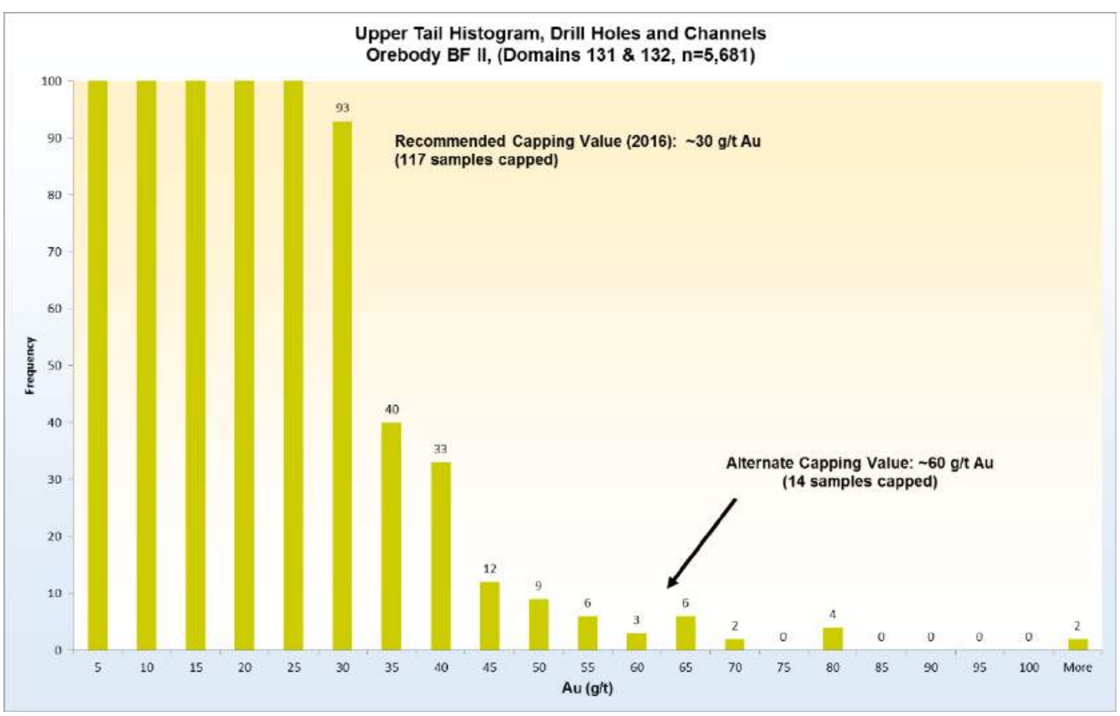


FIGURE 14-18 FREQUENCY HISTOGRAM OF THE RAW ASSAYS CONTAINED WITHIN THE BF II MINERALIZED WIREFRAME



COMPOSITING METHODS

The selection of an appropriate composite length began with examination of the descriptive statistics of the raw assay samples and preparation of sample length frequency histograms. Consideration was also given to the size of the blocks in the model.

Many of the sample lengths in the various mineralized wireframes were found to range from 0.5 m to one metre in length. Consequently, on the basis of the available information, RPA believes that a composite length of one metre for all samples is reasonable. All samples contained within the mineralized wireframes were composited to a nominal one metre length using the best-fit function of the MineSight software package. The descriptive statistics of the composite samples are provided in Table 14-18.

TABLE 14-18 DESCRIPTIVE STATISTICS OF THE COMPOSITE SAMPLES, PILAR MINE
Jaguar Mining Inc. – Caeté Operations

Item	BA		BF		BF II		LFW	
	Comp Raw	Comp Cap	Comp Raw	Comp Cap	Comp Raw	Comp Cap	Comp Raw	Comp Cap
Mean	3.48	3.46	3.73	3.71	5.32	5.02	1.81	1.62
Median	1.24	1.24	1.20	1.20	2.22	2.22	0.69	0.69
Mode	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Standard Deviation	6.28	6.13	6.49	6.19	7.89	6.47	9.13	2.54
CV	1.80	1.77	1.74	1.67	1.48	1.29	5.05	1.56
Sample Variance	39.49	37.61	42.10	38.33	62.29	41.80	83.31	6.44
Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum	93.21	60.00	115.17	60.00	159.65	30.00	507.50	20.00
Count	17,765	17,765	13,487	13,487	5,405	5,405	3,414	3,414

Item	LPA		LHW		Torre		SW	
	Comp Raw	Comp Cap	Comp Raw	Comp Cap	Comp Raw	Comp Cap	Comp Raw	Comp Cap
Mean	2.70	2.58	2.16	1.88	2.16	2.04	2.04	1.93
Median	1.07	1.07	0.97	0.97	0.70	0.70	0.64	0.64
Mode	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01
Standard Deviation	4.26	3.79	3.94	2.34	5.09	4.06	3.96	3.31
CV	1.58	1.47	1.82	1.25	2.36	2.00	1.94	1.71
Sample Variance	18.15	14.35	15.52	5.48	25.89	16.51	15.70	10.95
Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum	46.13	46.13	58.42	10.00	128.33	30.00	56.17	20.00
Count	2,158	2,158	1,828	1,828	4,441	4,441	2,358	2,358

BULK DENSITY

Jaguar has initiated a program of bulk density measurements on the various lithologies that are present at the Pilar Mine in 2015. The density measurements were made on representative samples of drill core from intervals of iron formation and quartz vein that are located within the mineralized wireframes, along with measurements carried out on samples of adjoining waste rock units. The density measurements were carried out at the Jaguar analytical laboratory located at the Roça Grande Mine using the water displacement method. In all, a total of 888 density measurements were used to prepare the Mineral Resource estimate. A summary of the results is presented in Table 14-19.

TABLE 14-19 SUMMARY OF 2015 DENSITY MEASUREMENTS, PILAR MINE
Jaguar Mining Inc. – Caeté Operations

Zone	Density	Number of Samples
BA	3.04	90
BF	3.15	287
BF II	3.11	194
LFW	2.85	119
LPA		
Lens 301	3.20	28
Lens 302-304	3.12	15
LHW	3.06	29
Torre	2.84	70
SW		
Lens 601, 603	3.17	49
Lens 602, 604, and 605	2.87	7

TREND ANALYSIS

As an aid in carrying out variography studies of the continuity of the gold grades in the mineralized domain models, a short study to examine the overall trends was carried out. For this exercise, a data file was prepared that contained the gold values for each drill hole and channel sample contained within the respective mineralized domain model. The resulting gold grade times thickness product (GT) were digitally contoured using the LeapFrog software package and the results are shown in Figures 14-19 to 14-21.

It can be seen that an overall down-plunge of the gold grade is present for Orebodies BA and BF. The gold distribution in Orebody BF II does not show any clear trends, however, this may be due to the density of information combined with the isotropic search ellipse used to prepare the contours.

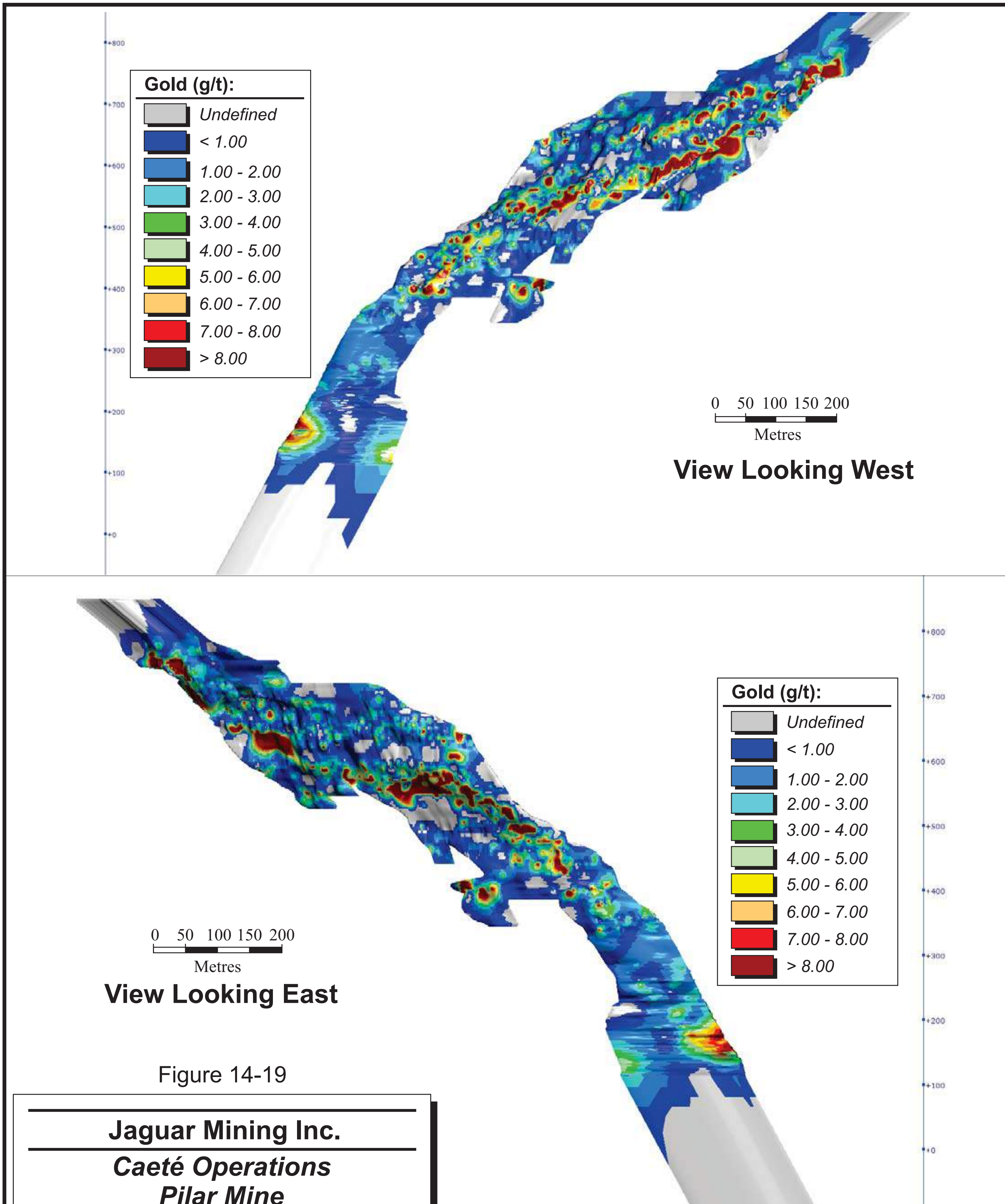


Figure 14-19

Jaguar Mining Inc.

Caeté Operations
Pilar Mine

Minas Gerais State, Brazil

Contoured Gold Grades
Orebody BA

April 2018

Source: RPA, 2018.

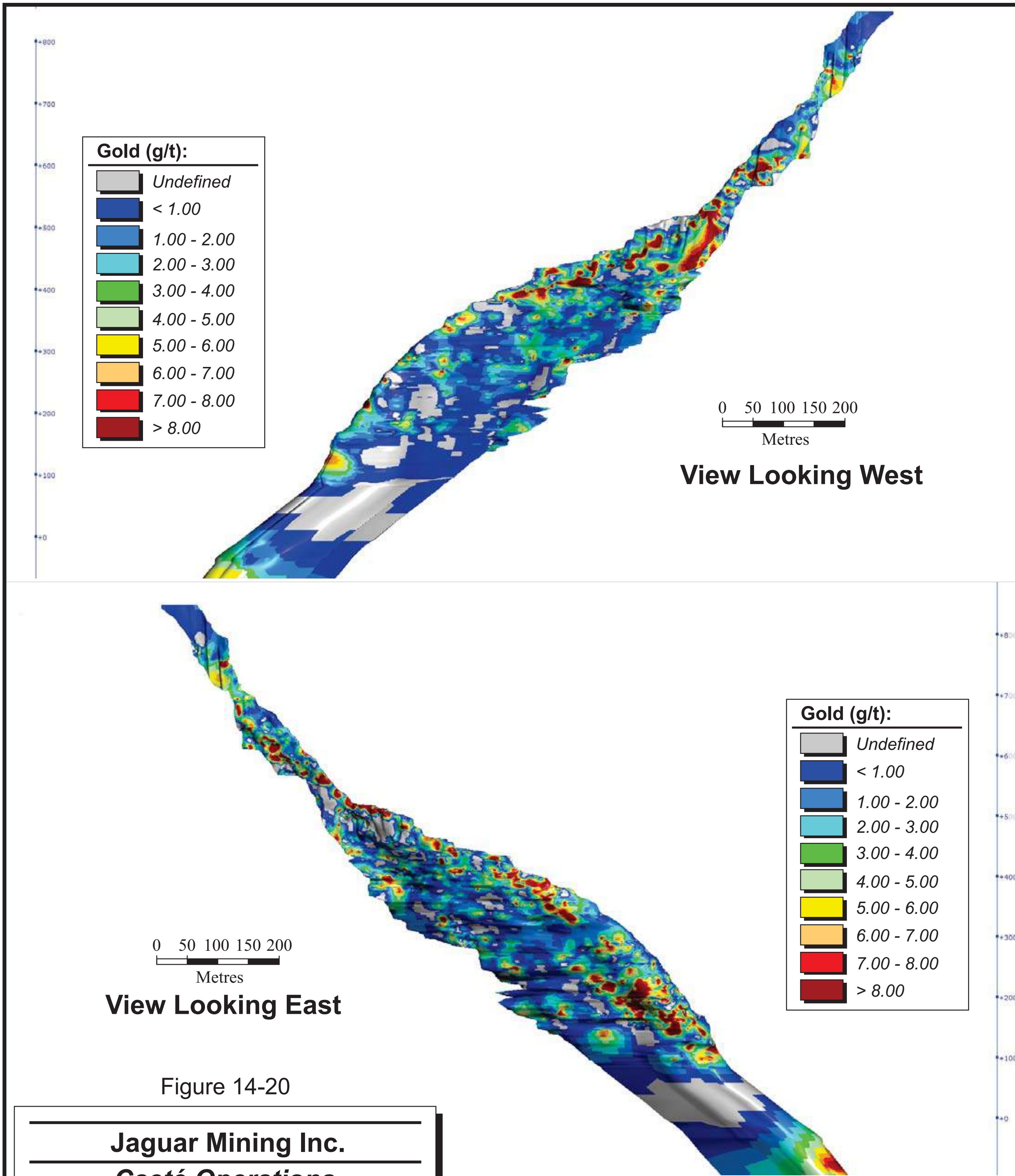


Figure 14-20

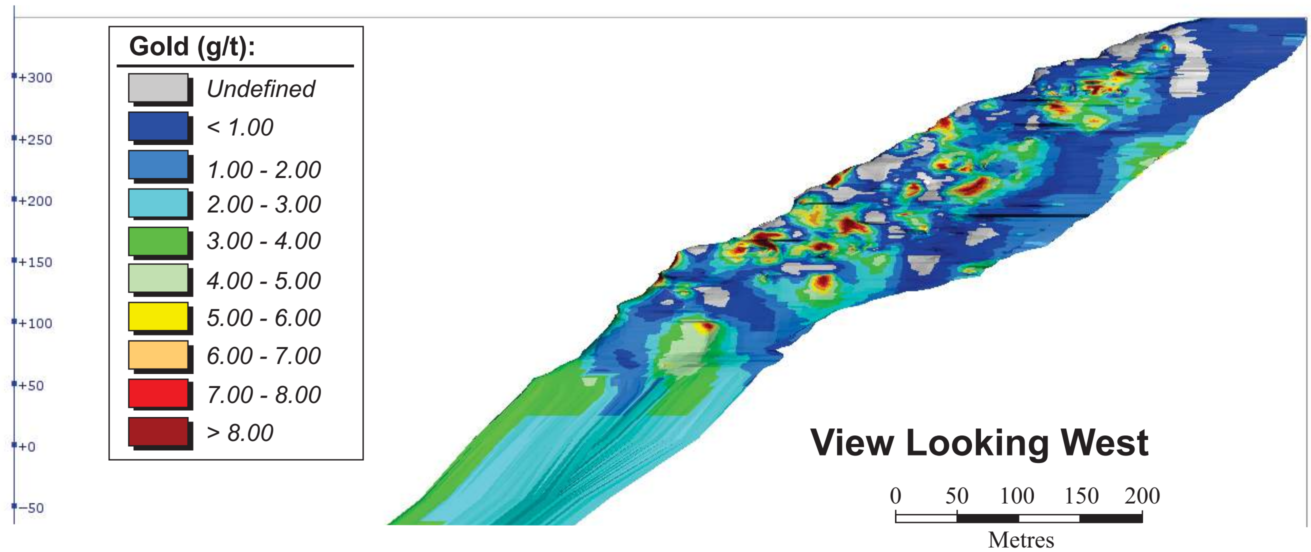
Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil

Contoured Gold Grades
Orebody BF

April 2018

Source: RPA, 2018.



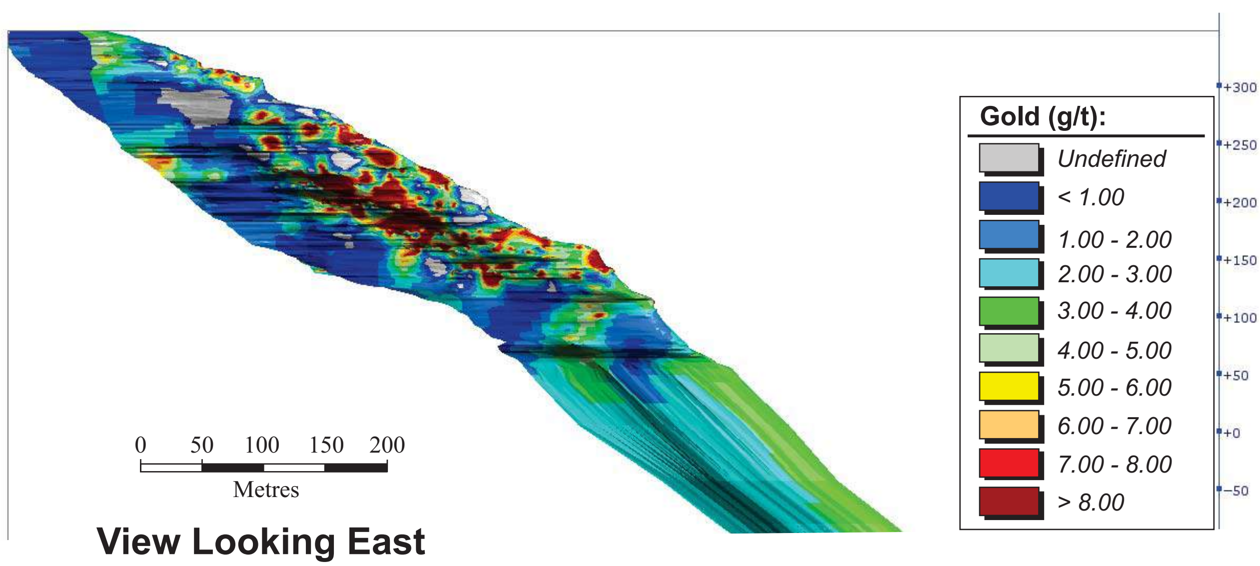


Figure 14-21

Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil

Contoured Gold Grades
Orebody BF II

April 2018

Source: RPA, 2018.

VARIOGRAPHY

The analysis of the spatial continuity was carried out in 2015 by Digamma Consulting (Digamma), a third-party consultant located in Belo Horizonte which evaluated the spatial continuity of the drill hole information alone and the combined drill hole plus channel sample data set. Digamma began its analysis of the spatial continuity by constructing separate omnidirectional correlograms using the capped, composited sample data for each of the orebodies, with the objective of determining an appropriate value for the global nugget. The analysis proceeded with the evaluation of any anisotropies that may be present in the data, which resulted in successful correlograms with reasonably good model fits. Example correlograms are presented in Figures 14-22 to 14-24. A summary of the correlogram parameters derived for each of the mineralized domains is presented in Tables 14-20 and 14-21.

FIGURE 14-22 CORRELOGRAM MODELS FOR THE BA DOMAIN

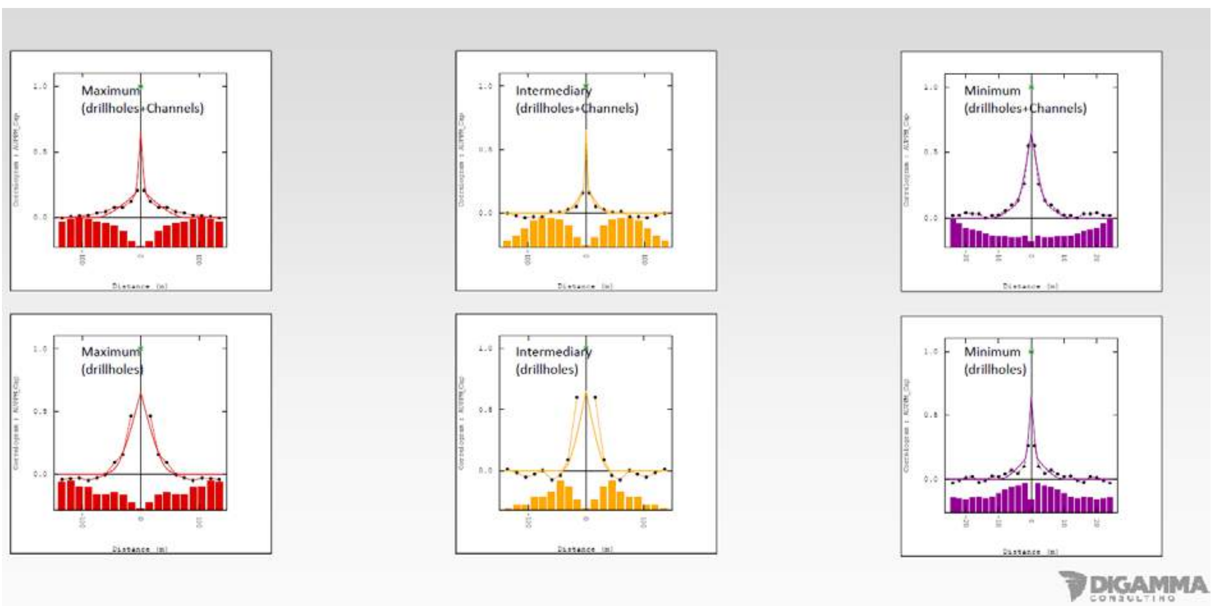


FIGURE 14-23 CORRELOGRAM MODELS FOR THE BF DOMAIN

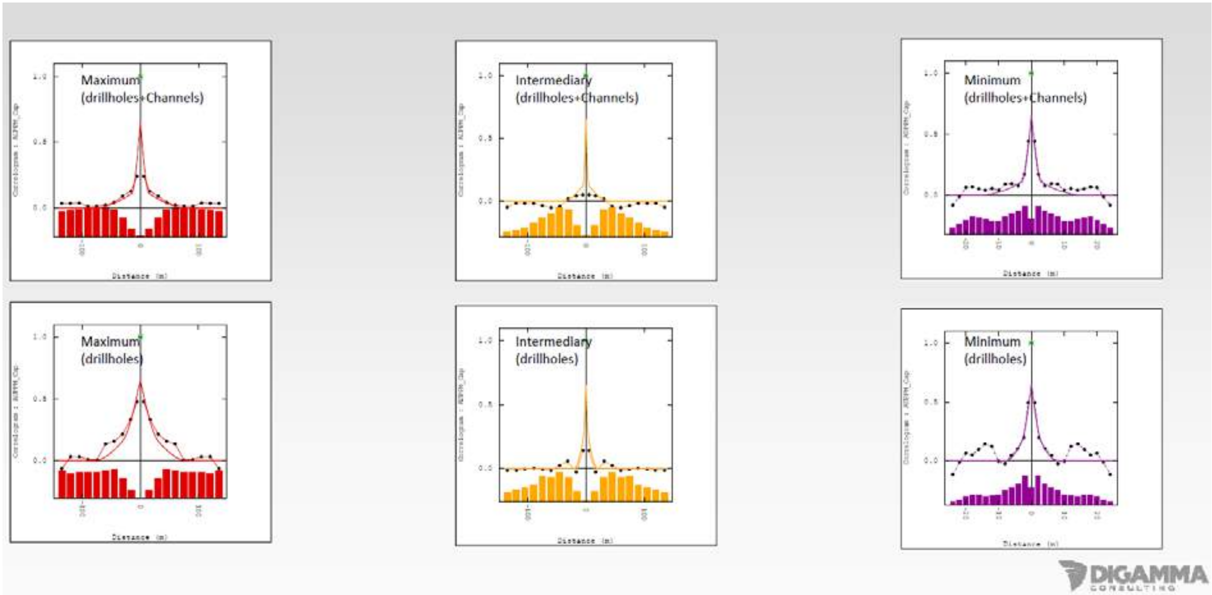


FIGURE 14-24 CORRELOGRAM MODELS FOR THE BF II DOMAIN

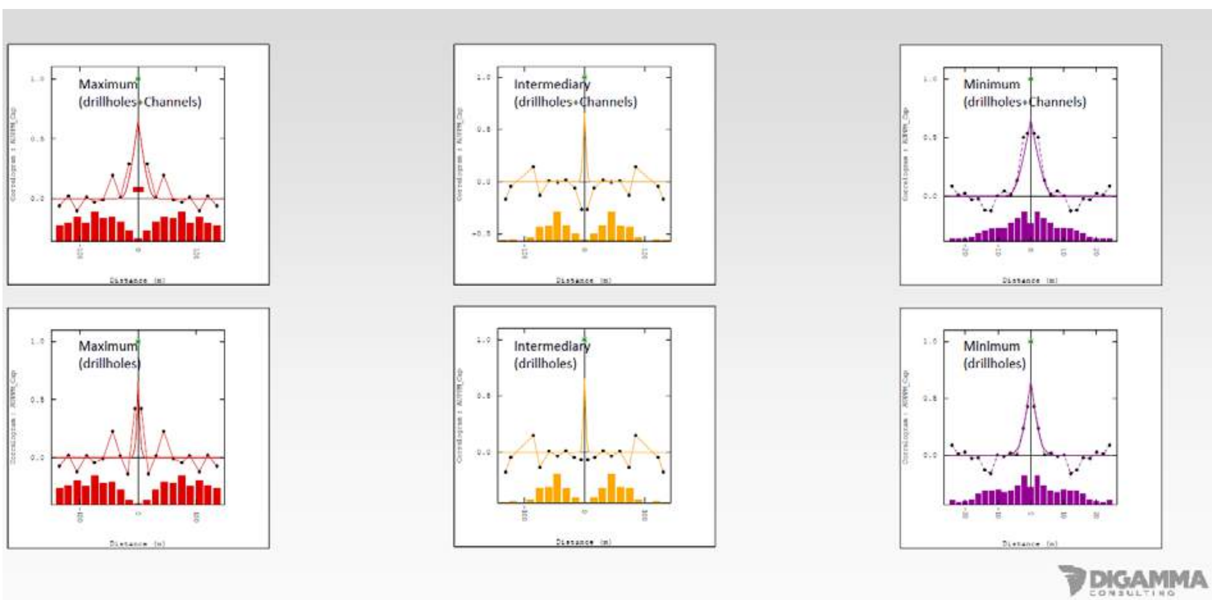


TABLE 14-20 SUMMARY OF CORRELOGRAM PARAMETERS, DRILL HOLE AND CHANNEL SAMPLES COMBINED
Jaguar Mining Inc. – Caeté Operations

Domain	Model (correlogram)	Nugget Effect	1° Structure				2° structure			
			Sill	Minor	Intermediary	Major	Sill	Minor	Intermediary	Major
101_BA	Omni	0.35	0.5		8		0.15		50	
101_BA	Directional	0.35	0.43	5	5	10	0.22	13	40	80
102_BF	Omni	0.35	0.5		8		0.15		50	
102_BF	Directional	0.35	0.5	3	5	8	0.15	15	40	80
103_BFII	Omni	0.35	0.4		6		0.25		8	
103_BFII	Directional	0.35	0.4	6	6	6	0.25	8	8	8
200_LFW	Omni	0.3	0.5		3		0.2		25	
200_LFW	Directional	0.3	0.6	6	15	15	0.1	8	30	60
300_LPA	Omni	0.3	0.45		3		0.25		18	
300_LPA	Directional	0.25	0.5	5	7	10	0.25	10	28	30
400_LHW	Omni	0.3	0.3		3		0.4		8	
400_LHW	Directional	-	-	-	-	-	-	-	-	-
500_C	Omni	0.35	0.55		5		0.1		30	
500_C	Directional	0.35	0.43	3	5	10	0.22	8	12	500
600_SW	Omni	0.35	0.45		5		0.2		40	
600_SW	Directional	0.35	0.5	4	22	22	0.15	7	60	80
Group_100-301	Omni	0.35	0.5		8		0.15		50	
Group_100-300	Directional	0.35	0.43	5	5	10	0.22	13	40	80

DIGAMMA CONSULTING

TABLE 14-21 SUMMARY OF CORRELOGRAM PARAMETERS, DRILL HOLE SAMPLES ALONE
Jaguar Mining Inc. – Caeté Operations

Domain	Model (correlogram)	Nugget Effect	1° Structure				2° structure			
			Sill	Minor	Intermediary	Major	Sill	Minor	Intermediary	Major
101_BA	Omni	0.35	0.3		4		0.35		50	
101_BA	Directional	0.35	0.43	2	40	50	0.22	10	45	70
102_BF	Omni	0.35	0.4		6		0.25		45	
102_BF	Directional	0.35	0.3	3	5	30	0.35	8	20	80
103_BFII	Omni	0.35	0.4		6		0.25		8	
103_BFII	Directional	0.35	0.4	4	6	6	0.25	7	8	12
200_LFW	Omni	0.3	0.5		3		0.2		8	
200_LFW	Directional	0.3	0.6	6	15	15	0.1	8	30	60
300_LPA	Omni	0.2	0.2		3		0.6		10	
300_LPA	Directional	0.2	0.5	10	10	18	0.3	10	20	50
400_LHW	Omni	0.25	0.45		3		0.3		9	
400_LHW	Directional	-	-	-	-	-	-	-	-	-
500_C	Omni	0.35	0.55		4		0.1		25	
500_C	Directional	0.3	0.5	4	15	15	0.2	13	25	70
600_SW	Omni	0.35	0.45		3		0.2		9	
600_SW	Directional	0.35	0.5	4	22	22	0.15	8	70	80
Group_100-301	Omni	0.35	0.35		5		0.3		55	
Group_100-300	Directional	0.35	0.4	2	23	38	0.25	15	55	80

DIGAMMA CONSULTING

BLOCK MODEL CONSTRUCTION

The block model was constructed by Jaguar using the MineSight version 7.60 software package and comprised an array of 2 m x 2 m x 2 m sized blocks using partial percentage attributes for mineralized wireframes and topography. The model is oriented parallel to the coordinate grid system (i.e., no rotation or tilt). The selection of the block size for this model was based upon the block sizes previously employed at the mine. The block model origin, dimensions, and attribute list are provided in Table 14-22. A number of attributes were created to store such information as rock code, material densities, estimated gold grades, mineral resource classification, mined out material and the like (Table 14-23).

TABLE 14-22 BLOCK MODEL DEFINITION, PILAR MINE
Jaguar Mining Inc. – Caeté Operations

Type	Y (Northing)	X (Easting)	Z (Elevation)
Minimum Coordinates (m)	7,787,950	662,000	-400
Maximum Coordinates (m)	7,789,500	663,100	1,000
Block Size (m)	2	2	2
Rotation (°)	0.000	0.000	0.000

TABLE 14-23 BLOCK MODEL ATTRIBUTES, PILAR MINE
Jaguar Mining Inc. – Caeté Operations

Attribute Name	Type	Decimals	Default	Description
au_id3_c	Real	2	0	Gold by ID3, capped composites
au_ok_c	Real	2	0	Gold by OK, capped composites
avd	Real	2	0	Average distance of informing samples
class	Integer	-	0	1=measured, 2=indicated, 3=inferred
clod	Real	2	0	Distance to nearest informing sample
density	Real	2	2.87	Density
fthd	Real	2	0	Distance to farthest informing sample
mined	Integer	-	0	Mined out (1=development, 2=stopes, 5=resource)
ndh	Integer	-	0	Number of drill holes
nq	Integer	-	0	Number of quadrants with informing samples
nsamp	Integer	-	0	Number of Informing Samples
ore_pct	Real	2	0	Percent inside wireframe
pass	Integer	-	0	Estimation pass
resource	Integer	-	0	Reporting flag (resource = 1(
rock	Integer	-	0	Rock code
rsrc	Integer	-	0	Post-processed classification (Class_Final)
topo_pct	Real	1	0	Percent below topo
var	Real	2	0	Kriging variance

Gold grades were estimated into the blocks by means of both ID^3 and OK interpolation algorithms using the capped composited sample information. A total of ten interpolation passes were carried out using distances derived from the correlogram results and the search ellipse parameters presented above (Table 14-24). In general, all search ellipses were oriented along the overall down-plunge direction of the mineralized domains (Figure 14-25).

TABLE 14-24 ESTIMATION RANGES BY INTERPOLATION PASS
Jaguar Mining Inc. – Caeté Operations

Range			Range/2		Range		2xRange		3xRange		12xRange
PASS		1	**2**	3	**4**	5	**6**	7	**8**	9	**10**
CLASS		1		2		3		4			
Direction	Major	18	**35**	53	**70**	105	**140**	175	**210**	315	**840**
	Secundary	12	**24**	36	**48**	72	**96**	120	**144**	216	**576**
	Minor	4	**7**	10	**13**	20	**26**	32	**39**	58	**156**
# Min composites		3	**3**	2	**2**	1	**1**	1	**1**	1	**1**
# Max composites		8	**8**	8	**8**	8	**8**	8	**8**	8	**8**
# max comp by DH		2	**2**	2	**2**	1	**1**	1	**1**	1	**1**
Special selection		Quad.	**Quad.**	Quad.	**Quad.**	Quad.	**Quad.**	Quad.	**Quad.**	Quad.	**Quad.**
# max comp by quad/oct		2	**2**	2	**2**	2	**2**	2	**2**	2	**2**

In general, “hard” domain boundaries were used along the contacts of the mineralized domain models. Only data contained within the respective wireframe model were allowed to be used to estimate the grades of the blocks within the wireframe in question, and only those blocks within the wireframe limits were allowed to receive grade estimates. For those mineralized lenses that exhibited tight folding, the individual wireframe models were further sub-domained into their two separate limbs and each were assigned unique block model codes for the hangingwall and footwall limbs (Figure 14-26). In order to avoid smearing of gold grades across the limbs, separate estimation passes were run for the hangingwall and footwall limbs of the isoclinally folded domains (BA, BF, and BF II) using the respective drill hole composite samples.

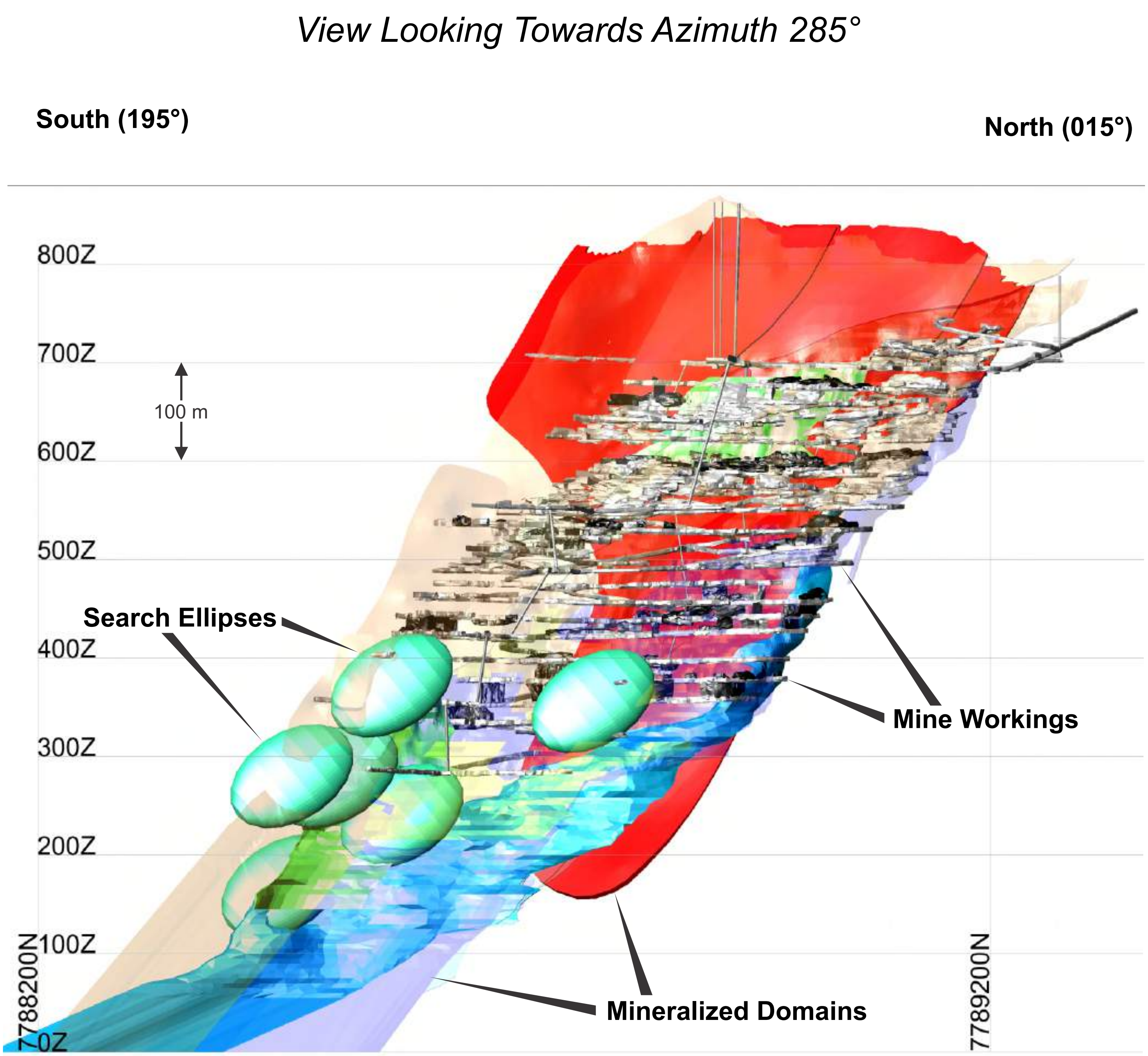


Figure 14-25

Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil
Longitudinal Projection Showing Orientation of the Search Ellipses

April 2018

Source: RPA, 2016.

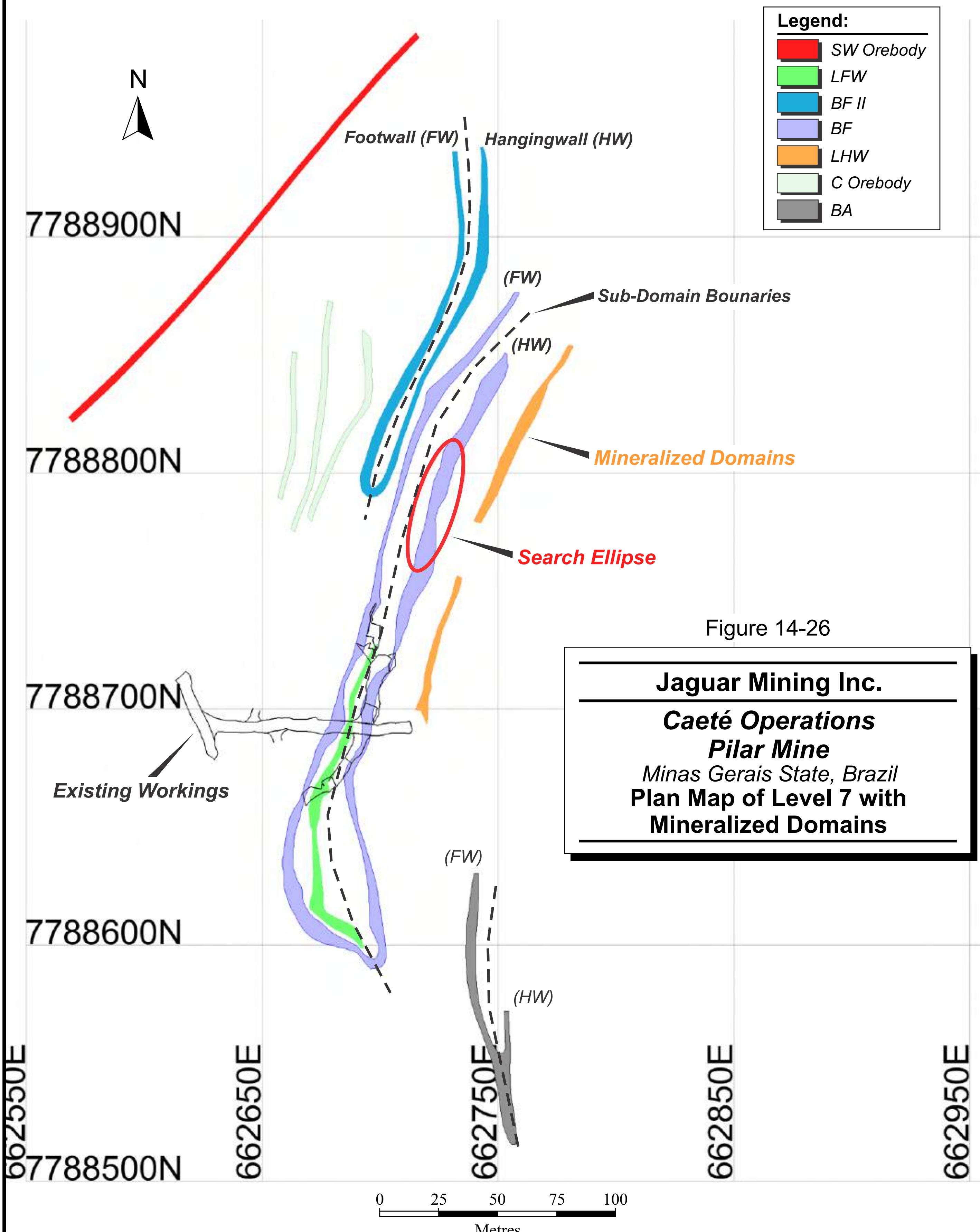


Figure 14-26

Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil
Plan Map of Level 7 with Mineralized Domains

April 2018

Source: RPA, 2016.

BLOCK MODEL VALIDATION

Block model validation exercises consisted of comparing the volume of the coded blocks in the block model against the volume report of the respective wireframe models as a high level check that the block model has been correctly coded for each of the wireframes (Table 14-25).

A second validation exercise consisted of evaluating the accuracy of the global estimate by comparing the descriptive statistics from the capped composited samples against the block model estimated gold grades (Table 14-26). In general, the block estimated mean grades for some of the mineralized domains were lower than the capped, composited informing samples. RPA attributes this difference to the clustering of the composite samples (channel samples) and to the interpolation of grades along the down-plunge projections of the wireframes for Orebodies BA, BF and BF II where a low density of drilling information is present.

TABLE 14-25 COMPARISON OF BLOCK MODEL AND WIREFRAME VOLUMES, PILAR MINE
Jaguar Mining Inc. – Caeté Operations

Orebody	BA	BF	BF II	LFW	LPA	LHW	Torre	SW
Block model	1,877,705	2,288,480	1,031,124	712,927	188,436	203,639	1,071,414	1,182,256
Wireframe	1,924,787	2,317,095	1,052,401	700,056	191,401	206,980	1,082,541	1,204,677
Difference (BM-Wf)	-47,082	-28,615	-21,277	12,871	-2,965	-3,341	-11,127	-22,421
% Difference	-2%	-1%	-2%	2%	-2%	-2%	-1%	-2%

TABLE 14-26 COMPARISON OF BLOCK MODEL AND CAPPED COMPOSITE GRADES, PILAR MINE
Jaguar Mining Inc. – Caeté Operations

Zone Code	Est. Type	Composites			Block Model			Abs Diff
		Min.	Max.	Mean	Minimum	Maximum	Mean	
111	AUOKC	0.01	60.00	3.24	0.01	39.65	2.29	-0.95
	AUI3C				0.01	58.76	2.29	-0.95
112	AUOKC	0.01	60.00	3.78	0.01	54.92	2.38	-1.40
	AUI3C				0.01	57.25	2.37	-1.41
121	AUOKC	0.01	60.00	3.95	0.01	35.74	3.97	0.02
	AUI3C				0.01	55.21	3.97	0.02
122	AUOKC	0.01	60.00	2.96	0.01	33.26	2.64	-0.32
	AUI3C				0.01	48.00	2.72	-0.24
131	AUOKC	0.01	30.00	5.97	0.01	24.51	3.28	-2.69
	AUI3C				0.01	29.89	3.29	-2.68

Zone Code	Est. Type	Composites Min.	Composites Max.	Composites Mean	Block Model Minimum	Block Model Maximum	Block Model Mean	Abs Diff
132	AUOKC	0.01	30.00	3.20	0.01	24.25	4.22	1.02
	AUI3C				0.01	29.52	4.24	1.04
201	AUOKC	0.01	19.81	2.58	0.01	11.75	2.27	-0.31
	AUI3C				0.01	18.49	2.25	-0.33
202	AUOKC	0.01	20.00	1.51	0.01	10.16	1.48	-0.03
	AUI3C				0.01	19.35	1.59	0.08
203	AUOKC	0.01	20.00	1.30	0.01	14.79	1.28	-0.02
	AUI3C				0.01	19.99	1.30	0.00
204	AUOKC	0.01	15.29	0.76	0.01	8.23	0.83	0.07
	AUI3C				0.01	13.68	0.86	0.10
205	AUOKC	0.01	16.82	0.85	0.01	8.55	0.81	-0.04
	AUI3C				0.01	15.13	0.80	-0.05
206	AUOKC	0.01	20.00	1.20	0.01	13.23	1.14	-0.06
	AUI3C				0.01	19.16	1.13	-0.07
207	AUOKC	0.01	16.68	1.88	0.01	10.48	1.54	-0.34
	AUI3C				0.01	14.26	1.50	-0.38
301	AUOKC	0.01	20.00	3.32	0.01	16.94	3.05	-0.27
	AUI3C				0.01	19.94	3.04	-0.28
302	AUOKC	0.01	20.00	2.63	0.01	11.23	1.82	-0.81
	AUI3C				0.01	16.83	1.79	-0.84
303	AUOKC	0.01	11.04	1.38	0.01	6.69	1.35	-0.03
	AUI3C				0.01	10.31	1.30	-0.08
304	AUOKC	0.01	46.13	1.20	0.01	29.90	0.81	-0.39
	AUI3C				0.01	35.77	0.82	-0.38
401	AUOKC	0.01	10.00	1.93	0.01	9.53	1.38	-0.55
	AUI3C				0.01	10.00	1.38	-0.55
402	AUOKC	0.01	6.09	1.03	0.12	4.68	1.21	0.18
	AUI3C				0.01	5.77	1.22	0.19
403	AUOKC	0.02	10.00	0.79	0.01	5.65	0.91	0.12
	AUI3C				0.03	9.45	0.86	0.07
501	AUOKC	0.01	30.00	2.30	0.01	16.14	1.49	-0.81
	AUI3C				0.01	26.47	1.49	-0.81
502	AUOKC	0.01	30.00	1.84	0.01	27.27	1.41	-0.43
	AUI3C				0.01	29.99	1.37	-0.47
503	AUOKC	0.01	30.00	2.45	0.01	28.64	1.98	-0.47
	AUI3C				0.01	29.89	2.01	-0.44
504	AUOKC	0.01	11.05	1.07	0.01	5.73	1.25	0.18
	AUI3C				0.01	10.25	1.31	0.24
505	AUOKC	0.01	20.19	1.54	0.01	17.38	2.69	1.15
	AUI3C				0.01	19.64	2.65	1.11
601	AUOKC	0.01	20.00	1.98	0.01	17.14	1.82	-0.16
	AUI3C				0.01	26.47	1.81	-0.17

Zone Code	Est. Type	Composites Min.	Composites Max.	Composites Mean	Block Model Minimum	Block Model Maximum	Block Model Mean	Abs Diff
602	AUOKC	0.01	18.48	2.01	0.01	13.39	1.48	-0.53
	AUI3C				0.01	14.49	1.49	-0.52
603	AUOKC	0.01	20.00	1.59	0.01	11.51	1.34	-0.25
	AUI3C				0.01	19.31	1.37	-0.22
604	AUOKC	0.01	2.19	0.78	0.01	2.06	1.09	0.31
	AUI3C				0.01	2.18	1.08	0.30
605	AUOKC	0.01	3.44	0.27	0.01	2.09	0.31	0.04
	AUI3C				0.01	3.16	0.29	0.02
700	AUOKC	0.54	5.66	2.70	0.54	5.66	2.44	-0.26
	AUI3C				0.54	5.66	2.45	-0.25
701	AUOKC	0.05	20.00	2.72	0.05	8.93	3.25	0.53
	AUI3C				0.54	8.93	3.30	0.58
702	AUOKC	0.83	4.28	2.51	0.83	4.28	2.55	0.04
	AUI3C				0.83	4.28	2.55	0.04
703	AUOKC	0.62	0.88	0.74	0.62	0.88	0.75	0.01
	AUI3C				0.62	0.88	0.74	0.00
704	AUOKC	0.09	5.29	1.08	0.09	2.92	1.02	-0.06
	AUI3C				0.09	2.92	1.02	-0.06

Evaluation of the accuracy of the local estimate was carried out by construction of a series of swath plots that compared the average composite grades to the average estimated block model grades in plan and section. Swath plots for selected wireframes are presented in Figures 14-27 to 14-29. The accuracy of the local estimate was also examined visually by comparing the contoured grade distributions from the drill hole and channel sample information to the estimated block grades (Figures 14-30 to 14-32).

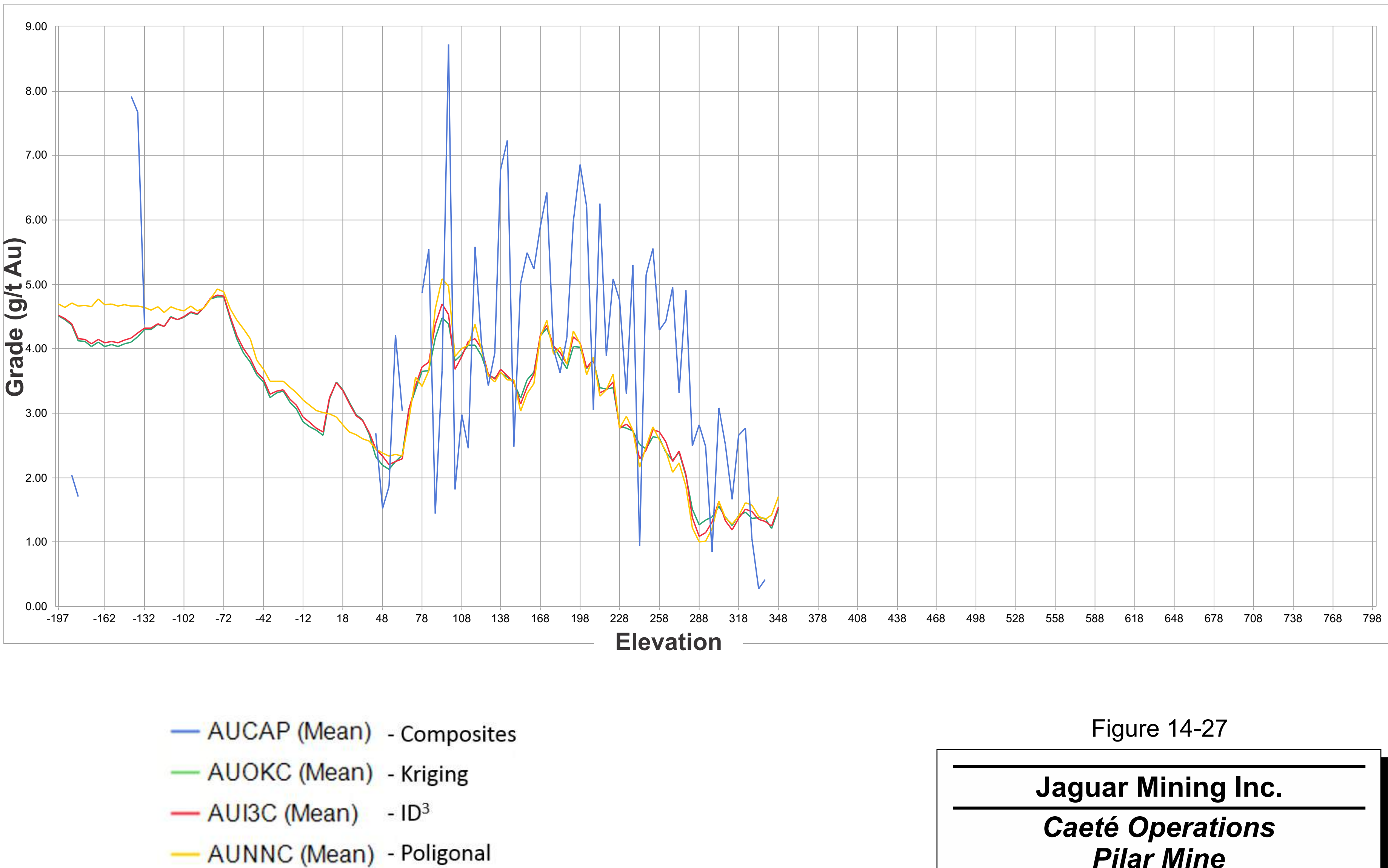


Figure 14-27

Jaguar Mining Inc.

Caeté Operations

Pilar Mine

Minas Gerais State, Brazil

Swath Plot by Elevation

Orebody BA

April 2018

Source: RPA, 2016.

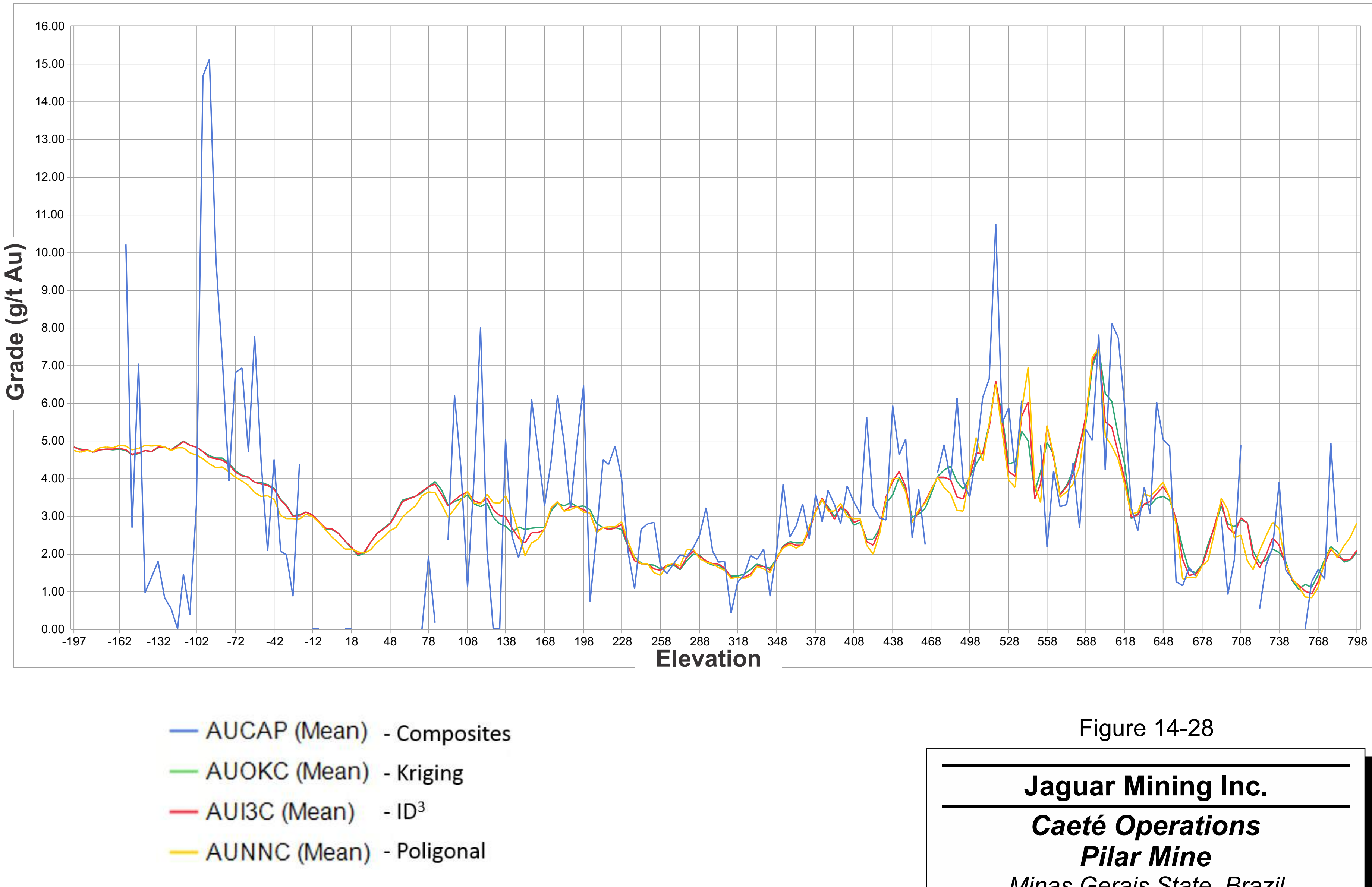


Figure 14-28

Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil

Swath Plot by Elevation
Orebody BF

April 2018

Source: RPA, 2016.

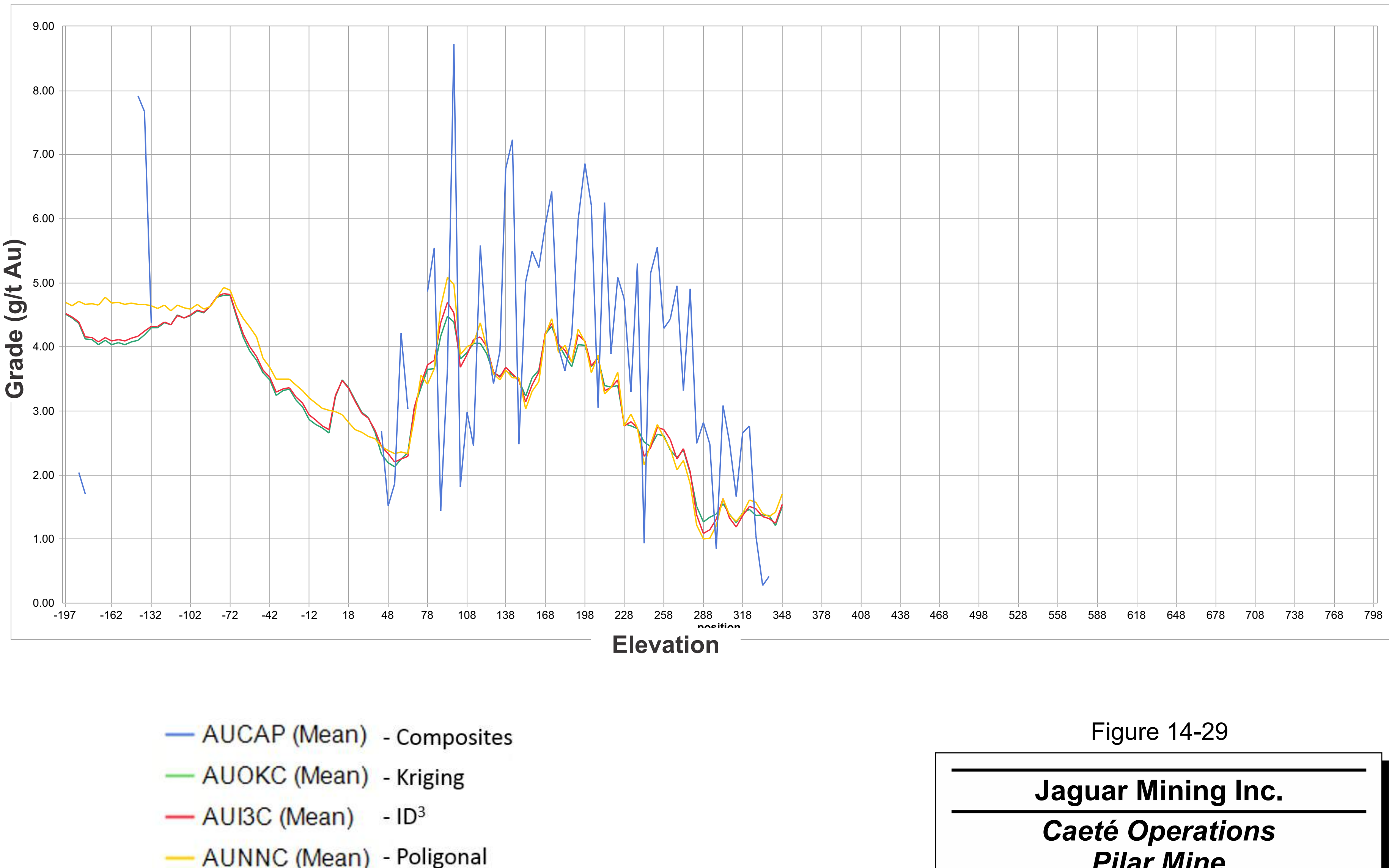


Figure 14-29

Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil
Swath Plot by Elevation
Orebody BF II

April 2018

Source: RPA, 2016.

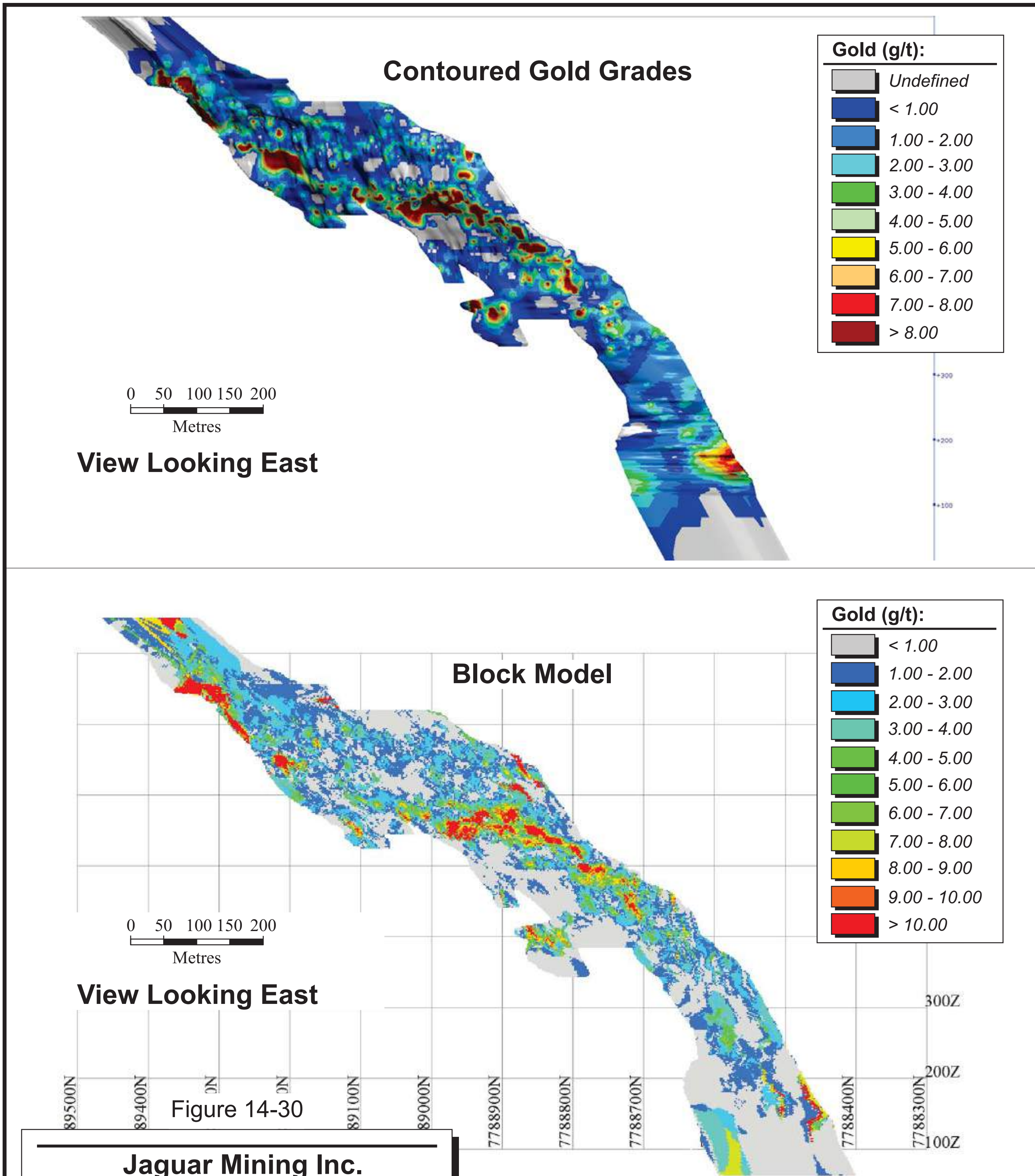


Figure 14-30

Jaguar Mining Inc.

Caeté Operations
Pilar Mine

Minas Gerais State, Brazil

Comparison of Contoured Gold Grades with Block Model Estimated Grades Orebody BA

April 2018

Source: RPA, 2018.

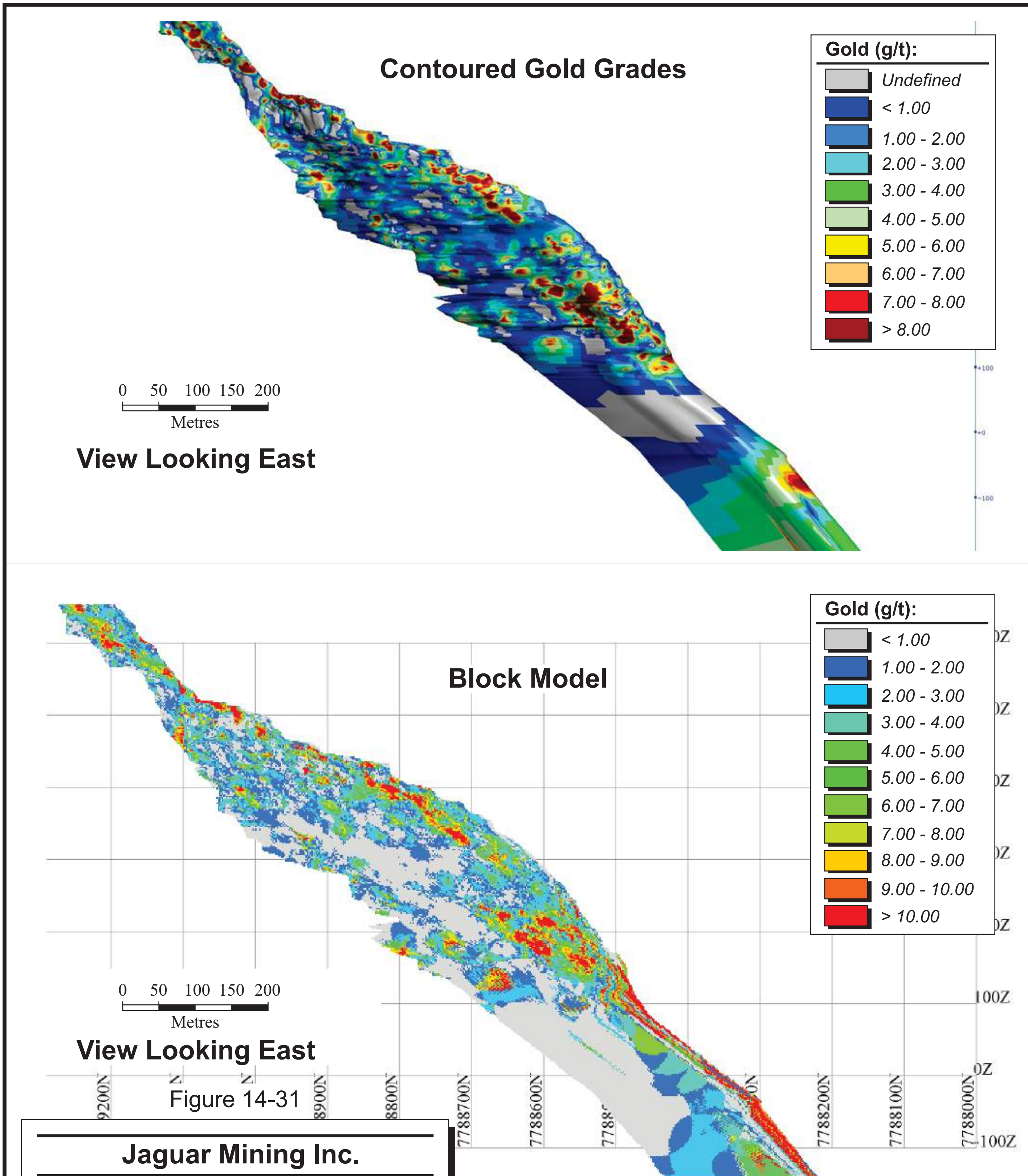


Figure 14-31

Jaguar Mining Inc.

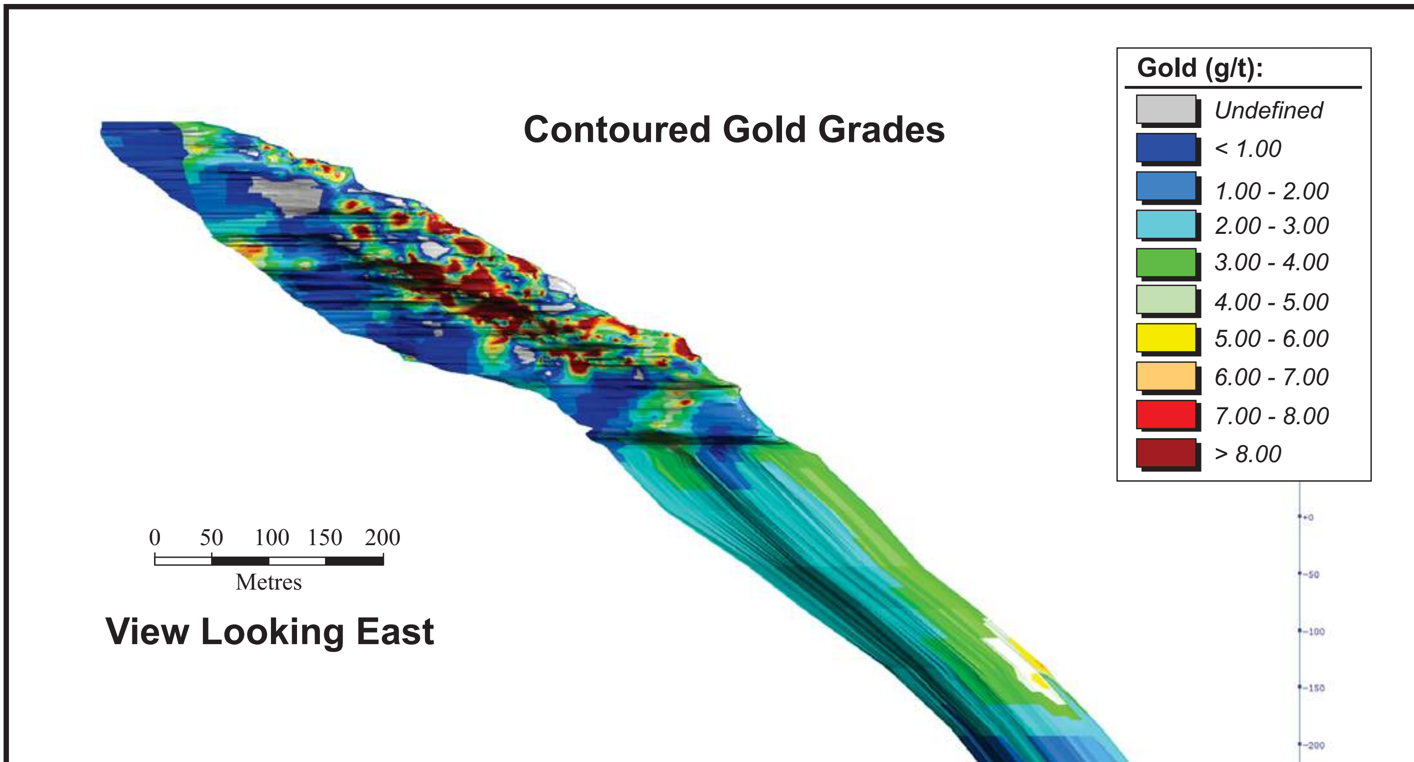
Caeté Operations
Pilar Mine

Minas Gerais State, Brazil

Comparison of Contoured Gold Grades with Block Model Estimated Grades Orebody BF

April 2018

Source: RPA, 2018.



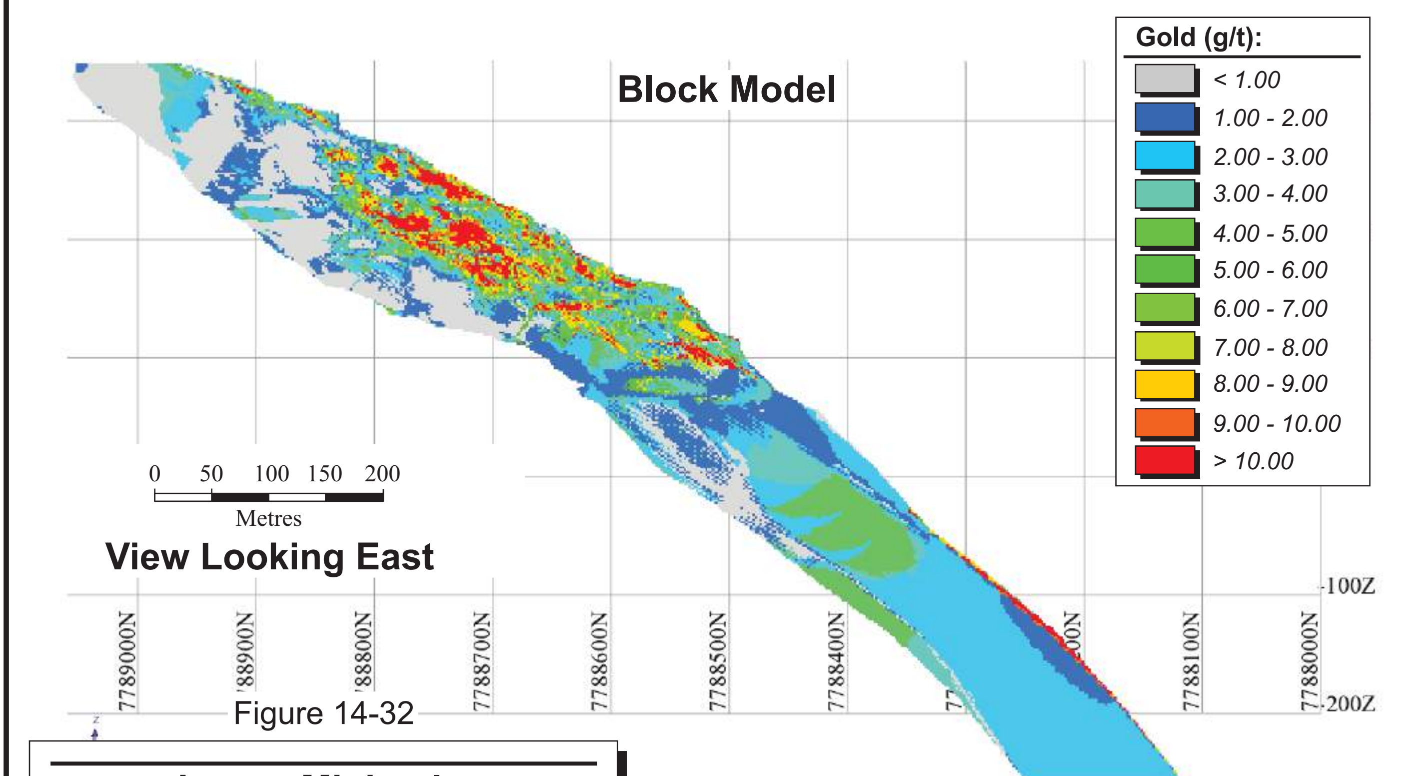


Figure 14-32

Jaguar Mining Inc.

Caeté Operations
Pilar Mine

Minas Gerais State, Brazil

Comparison of Contoured Gold Grades with Block Model Estimated Grades Orebody BF II

April 2018

Source: RPA, 2018.

RECONCILIATION TO PRODUCTION

Further validation of the accuracy of the estimated block model grades consisted of comparing the mill production statistics with the predicted volumes of diluted and recovered tonnes and grade from the block model for the period of January 2016 to December 2017 (Table 14-27). The material flow for the Pilar mine begins with the transportation of the broken development muck and stope tonnes to the surface, where the material is placed in a temporary laydown area for sampling. The material is then transported overland by truck to the processing plant which also receives a small amount of tonnes from the Roça Grande Mine.

Considering that the block model reported tonnage and grade was derived from both drill hole and channel sample data, this comparison corresponds to an F2 reconciliation (short-term model to plant) as described in Parker (2004). The monthly tonnage and grade figures derived from the 2017 block model utilized the as-mined excavation solids models for the development and stopes completed in 2017 to constrain the reports. The mined out volumes were created using data collected using a Cavity Monitoring Survey (CMS) and/or total station survey equipment. In some cases, the shape and size of the excavated volumes could not be picked up due to equipment failures, timing, or safety issues. In these events, the design shape for the excavations in question were used as a proxy.

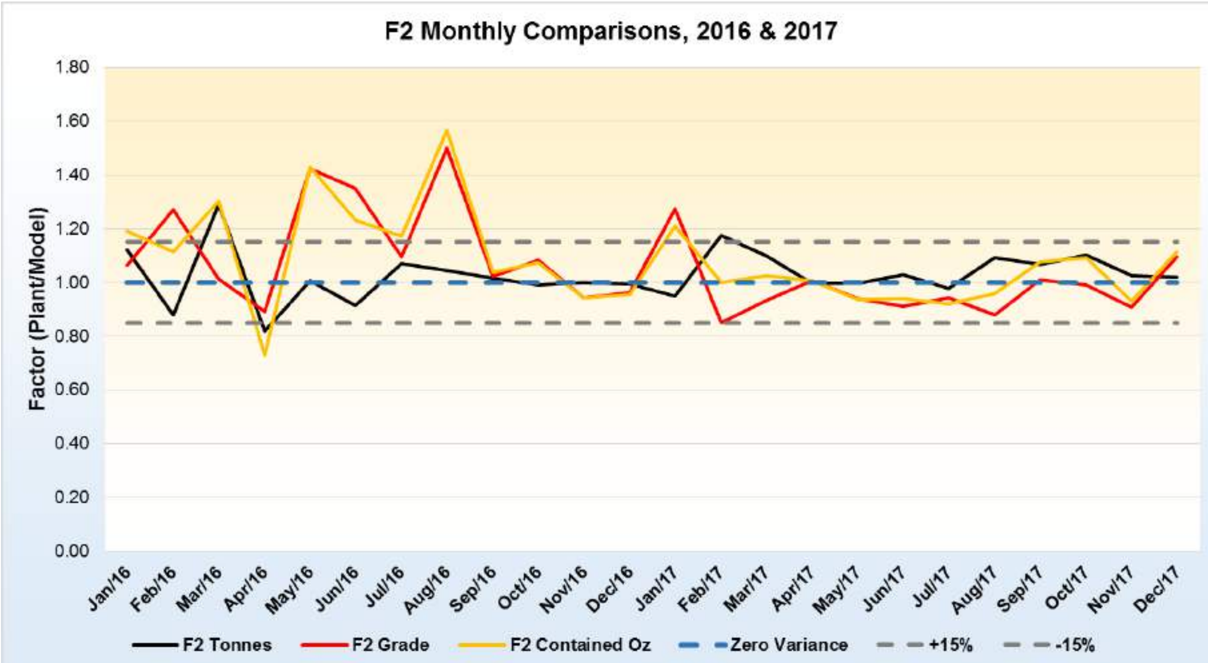
The grade of all blocks that are located outside of the mineralized wireframe models (ostensibly the waste materials) has been set to a value of zero for the 2017 block model. This approach will then result in the inclusion of all waste tonnes (both planned and unplanned dilution) along with the recovered ore tonnes. The data then represent the fully diluted, recovered tonnes and grade.

The reconciliation results are showing that there is a good correlation between the block model predicted tonnages and grades against the mill production statistics for the periods examined (Figure 14-33). The block model performed well for the 2017 reporting period, but slightly under-predicted the gold content for 2016 by approximately 10%. The variances in grade and contained ounces were greatest in 2016, but decreased to within 15% in 2017

TABLE 14-27 SHORT-TERM MODEL TO PLANT (F2) COMPARISON, JANUARY 2016 TO DECEMBER 2017, PILAR MINE
Jaguar Mining Inc. – Caeté Operations

Period	Production			Block Model (OK)			Difference Plant/Model		
	Mass (t)	Au (g/t)	Au (oz.)	Mass (t)	Au (g/t)	Au (oz.)	Mass (t)	Au (g/t)	Au (oz.)
				2016:					
January	16,813	2.84	1,534	15,009	2.67	1,289	12%	6%	19%
February	20,953	2.76	1,857	23,872	2.17	1,666	-12%	27%	11%
March	19,969	3.37	2,163	15,495	3.33	1,659	29%	1%	30%
Q1 2016	***57,736***	***2.99***	***5,554***	***54,376***	***2.64***	***4,613***	***6%***	***13%***	***20%***
April	19,905	4.07	2,604	24,330	4.56	3,567	-18%	-11%	-27%
May	26,914	3.49	3,017	26,764	2.45	2,108	1%	42%	43%
June	24,114	3.50	2,710	26,386	2.59	2,197	-9%	35%	23%
Q2 2016	***70,934***	***3.65***	***8,331***	***77,480***	***3.16***	***7,873***	***-8%***	***16%***	***6%***
July	22,533	4.36	3,162	21,064	3.98	2,696	7%	10%	17%
August	27,902	3.00	2,690	26,717	2.00	1,718	4%	50%	57%
September	26,919	3.36	2,911	26,517	3.29	2,805	2%	2%	4%
Q3 2016	***77,354***	***3.52***	***8,763***	***74,299***	***3.02***	***7,219***	***4%***	***17%***	***21%***
October	33,143	2.99	3,185	33,477	2.76	2,971	-1%	8%	7%
November	29,719	3.22	3,073	29,718	3.41	3,258	0%	-6%	-6%
December	27,372	3.40	2,996	27,550	3.54	3,136	-1%	-4%	-4%
Q4 2016	***90,233***	***3.19***	***9,254***	***90,744***	***3.21***	***9,365***	***-1%***	***-1%***	***-1%***
Total 2016	**296,257**	**3.35**	**31,903**	**296,898**	**3.05**	**29,071**	**0%**	**10%**	**10%**
				2017:					
January	26,078	3.50	2,935	27,433	2.75	2,426	-5%	27%	21%
February	26,928	3.45	2,991	22,923	4.06	2,993	17%	-15%	0%
March	24,548	3.85	3,042	22,349	4.13	2,968	10%	-7%	3%
Q1 2017	**77,554**	**3.60**	**8,968**	**72,705**	**3.59**	**8,386**	**7%**	**0%**	**7%**
April	24,238	4.04	3,149	24,284	4.01	3,131	0%	1%	1%
May	29,207	3.20	3,010	29,290	3.41	3,212	0%	-6%	-6%
June	31,873	3.46	3,546	30,940	3.80	3,780	3%	-9%	-6%
Q2 2017	***85,318***	***3.54***	***9,705***	***84,513***	***3.73***	***10,123***	***1%***	***-5%***	***-4%***
July	26,628	3.52	3,010	27,260	3.73	3,269	-2%	-6%	-8%
August	30,495	3.67	3,601	27,949	4.18	3,757	9%	-12%	-4%
September	31,828	4.48	4,590	29,856	4.44	4,262	7%	1%	8%
Q3 2017	***88,951***	***3.92***	***11,201***	***85,066***	***4.13***	***11,288***	***5%***	***-5%***	***-1%***
October	29,450	3.73	3,527	26,750	3.76	3,234	10%	-1%	9%
November	21,831	4.37	3,065	21,307	4.81	3,295	2%	-9%	-7%
December	32,002	4.32	4,447	31,430	3.95	3,992	2%	9%	11%
Q4 2017	***83,283***	***4.12***	***11,039***	***79,487***	***4.12***	***10,521***	***5%***	***0%***	***5%***
Total 2017	**335,106**	**3.80**	**40,914**	**321,771**	**3.90**	**40,319**	**4%**	**-3%**	**1%**

FIGURE 14-33 MINE TO MILL GRADE COMPARISON, JANUARY 2016 TO DECEMBER 2017, PILAR MINE



MINERAL RESOURCE CLASSIFICATION

The Mineral Resources in this report were estimated in accordance with the definitions contained in CIM (2014).

The mineralized material for each wireframe was initially classified into the Measured, Indicated, or Inferred Mineral Resource category on the basis of the search ellipse ranges obtained from the spatial continuity study, the demonstrated continuity of the gold mineralization, the density of drill hole and chip sample information, and the presence of underground access.

On the basis of these criteria, Measured Mineral Resources initially comprised that material which has been estimated using Passes 1 and 2 and are located between developed levels. Indicated Mineral Resources initially comprised that material that has been estimated using Passes 3 and 4, and Inferred Mineral Resources initially comprised that material that has been estimated using Passes 5 and 6. Jaguar employs an additional block model code to denote those areas considered to display good exploration potential for use in the decision process, and this material was defined by those grades that were estimated with Passes 8 through 10.

A post-processing clean-up step was applied in a final stage of the classification process to ensure continuity and consistency of the classified blocks in the model. This was applied by manually creating a series of clipping polygons which were subsequently used to assign the final classification codes into the block model. Figure 14-34 presents an example of the final classification layouts for the BA Domain.

RESPONSIBILITY FOR THE ESTIMATE

The estimate of the Mineral Resources for the Pilar Mine presented in this report was prepared by Mr. Hugo Leonardo de Avila Gomes, Senior Geologist with Jaguar under the supervision of Mr. Helbert Taylor Vieira, Resources and Reserves Manager with Jaguar, and Mr. Reno Pressacco, M.Sc.(A), P.Geo., Principal Geologist with RPA. Mr. Pressacco is a Qualified Person as defined in NI 43-101, is independent of Jaguar, and takes responsibility for this Mineral Resource estimate.

CUT-OFF GRADE

A cut-off grade of 1.93 g/t Au is used for reporting of Mineral Resources. This cut-off grade was arrived at using a gold price of US$1,400/oz, average gold recovery of 88%, average exchange rate of R$3.8 : US$1, and 2017 actual cost data for the Pilar Mine. Gold prices used for reserves are based on consensus, long term forecasts from banks, financial institutions, and other sources. For resources, gold prices used are slightly higher than those for reserves.

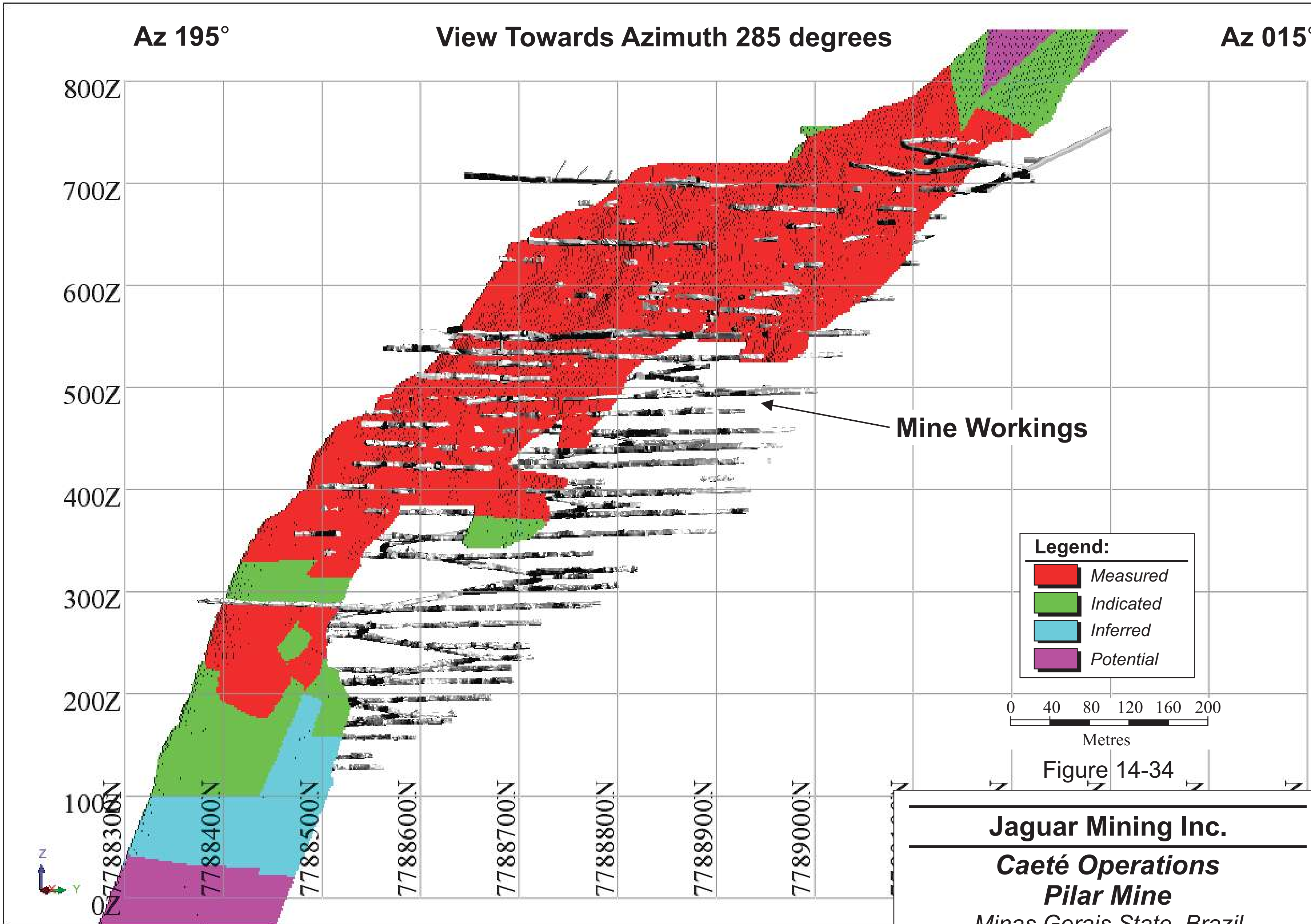


Figure 14-34

Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil
Classified Block Model
Orebody BA

April 2018

Source: RPA, 2016.

MINERAL RESOURCE ESTIMATE

The Mineral Resources are inclusive of Mineral Reserves. For those portions of the Mineral Resources that comprise the Mineral Reserve, the stope design wireframes were used to constrain the Mineral Resource reports.

Additional Mineral Resources are present that reside beyond the Mineral Reserves outlines as a result of the lower cut-off grade used for reporting of Mineral Resources. These are located as remnants above Level 11 (the limit of the current development) or as additional mineralized areas peripheral to the Mineral Reserve outlines in areas located below the current development. Three-dimensional resource polygons were prepared to aid in the estimation and reporting of the Mineral Resources to ensure that the requirement for spatial continuity is met. The reporting polygons were prepared in either plan, section or longitudinal views, as appropriate. They were drawn to include continuous volumes of blocks whose estimated grades were above the stated cut-off grade and were not located in mined out areas. These resource polygons were also used to exclude isolated blocks with limited to no spatial continuity but containing grades above the nominated cut-off. Blocks with estimated grades above the stated cut-off grade but located along either the hangingwall, footwall, or otherwise in close proximity to an excavated stope were also excluded. These resource polygons were used to appropriately code the block model and were used to report the Mineral Resources.

The current Mineral Resources are presented in Tables 14-28, 14-29, and 14-30. A longitudinal view of the current Mineral Resources for the BF and BF II domains is presented in Figure 14-35. The Mineral Resources as at December 31, 2016 are presented in Table 14-31 for comparative purposes.

TABLE 14-28 SUMMARY OF MINERAL RESOURCES AS OF DECEMBER 31, 2017 – PILAR MINE
Jaguar Mining Inc. – Caeté Operations

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Measured	2,203	4.47	317
Indicated	1,589	4.22	216
Sub-total M&I	**3,792**	**4.37**	**532**
Inferred	2,367	5.69	433

Notes:
1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at a cut-off grade of 1.93 g/t Au.
3. Mineral Resources are estimated using a long-term gold price of US$1,400 per ounce.

4. Mineral Resources are estimated using an average long-term foreign exchange rate of 3.8 Brazilian Reais: 1 US Dollar.
5. Bulk densities used are variable for each mineralized wireframe.
6. A minimum mining width of approximately 2 m was used.
7. Gold grades are estimated by the ordinary kriging cubed interpolation algorithm using capped composite samples.
8. Mineral Resources are inclusive of Mineral Reserves.
9. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
10. Numbers may not add due to rounding.

TABLE 14-29 SUMMARY OF MINERAL RESOURCES BY DOMAIN AS OF DECEMBER 31, 2017 – PILAR MINE
Jaguar Mining Inc. – Caeté Operations

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
	Orebody BA:		
Measured	457	4.53	67
Indicated	187	5.28	32
Sub-total M&I	**644**	**4.75**	**98**
Inferred	57	4.50	8
	Orebody BF:		
Measured	635	4.72	96
Indicated	74	4.73	11
Sub-total M&I	**709**	**4.72**	**108**
Inferred	1,360	6.71	293
	Orebody BF II:		
Measured	488	4.73	74
Indicated	259	4.56	38
Sub-total M&I	**747**	**4.67**	**112**
Inferred	828	4.38	117
	Orebody Torre:		
Measured	231	4.93	37
Indicated	233	4.41	33
Sub-total M&I	**464**	**4.67**	**70**
Inferred	62	4.15	8
	Orebody LFW:		
Measured	208	3.18	21
Indicated	34	3.19	3
Sub-total M&I	**242**	**3.18**	**25**
Inferred	-	-	-
	Orebody LHW:		
Measured	74	2.89	7
Indicated	7	2.85	1
Sub-total M&I	**81**	**2.89**	**8**
Inferred	-	-	-
	Orebody LPA:		
Measured	110	4.17	15
Indicated	110-	-	-
Sub-total M&I	**-**	**4.17**	**15**

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Inferred		-	-
	Orebody SW:		
Measured	-	-	98-
Indicated	795	3.82	98
Sub-total M&I	**795**	**3.82**	**7**
Inferred	60	3.46	
	Total Pilar Mine:		
Total, Measured	2,203	4.47	317
Total, Indicated	1,589	4.22	216
Total Measured & Indicated	**3,792**	**4.37**	**532**
Total, Inferred	2,367	5.69	433

Notes:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at a cut-off grade of 1.93 g/t Au.
3. Mineral Resources are estimated using a long-term gold price of US$1,400 per ounce.
4. Mineral Resources are estimated using an average long-term foreign exchange rate of 3.8 Brazilian Reais: 1 US Dollar.
5. Bulk densities used are variable for each mineralized wireframe.
6. A minimum mining width of approximately 2 m was used.
7. Gold grades are estimated by the ordinary kriging cubed interpolation algorithm using capped composite samples.
8. Mineral Resources are inclusive of Mineral Reserves.
9. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
10. Numbers may not add due to rounding.

TABLE 14-30 SUMMARY OF MINERAL RESOURCES BY LEVEL AS OF DECEMBER 31, 2017 – PILAR MINE

Jaguar Mining Inc. – Caeté Operations

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
	Levels 1 to 11 (within existing development):		
Measured	2,201	4.47	316
Indicated	1,490	4.23	203
Sub-total M&I	**3,691**	**4.37**	**519**
Inferred	284	7.62	70
	Levels 12 to 18:		
Measured	2	3.67	0.2
Indicated	100	4.18	13
Sub-total M&I	**102**	**4.17**	**13**
Inferred	2,082	5.41	362
	Total Pilar Mine:		
Total, Measured	2,203	4.47	317
Total, Indicated	1,589	4.22	216
Total Measured & Indicated	**3,792**	**4.38**	**532**
Total, Inferred	2,367	5.69	433

Notes:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at a cut-off grade of 1.93 g/t Au.
3. Mineral Resources are estimated using a long-term gold price of US$1,400 per ounce.
4. Mineral Resources are estimated using an average long-term foreign exchange rate of 3.8 Brazilian Reais: 1 US Dollar.
5. Bulk densities used are variable for each mineralized wireframe.
6. A minimum mining width of approximately 2 m was used.
7. Gold grades are estimated by the ordinary kriging cubed interpolation algorithm using capped composite samples.
8. Mineral Resources are inclusive of Mineral Reserves.
9. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
10. Numbers may not add due to rounding.

TABLE 14-31 SUMMARY OF MINERAL RESOURCES AS OF DECEMBER 31, 2016 – PILAR MINE
Jaguar Mining Inc. – Caeté Operations

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Measured	628	4.14	84
Indicated	2,687	4.62	399
Sub-total M&I	**3,315**	**4.53**	**482**
Inferred	1,207	5.45	212

Notes:
1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at a cut-off grade of 1.93 g/t Au.
3. Mineral Resources are estimated by depletion of the 2015 year-end block model with 2016 excavations.
4. Mineral Resources are estimated using a long-term gold price of US$1,400 per ounce.
5. Mineral Resources are estimated using an average long-term foreign exchange rate of 2.5 Brazilian Reais: 1 US Dollar.
6. A minimum mining width of approximately 2 m was used.
7. Bulk densities used are either 2.89 t/m^3 for iron-formation poor domains or 3.05 t/m^3 for iron-formation rich domains.
8. Gold grades are estimated by the inverse distance cubed interpolation algorithm using capped composite samples.
9. Mineral Resources are inclusive of Mineral Reserves.
10. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
11. Numbers may not add due to rounding.

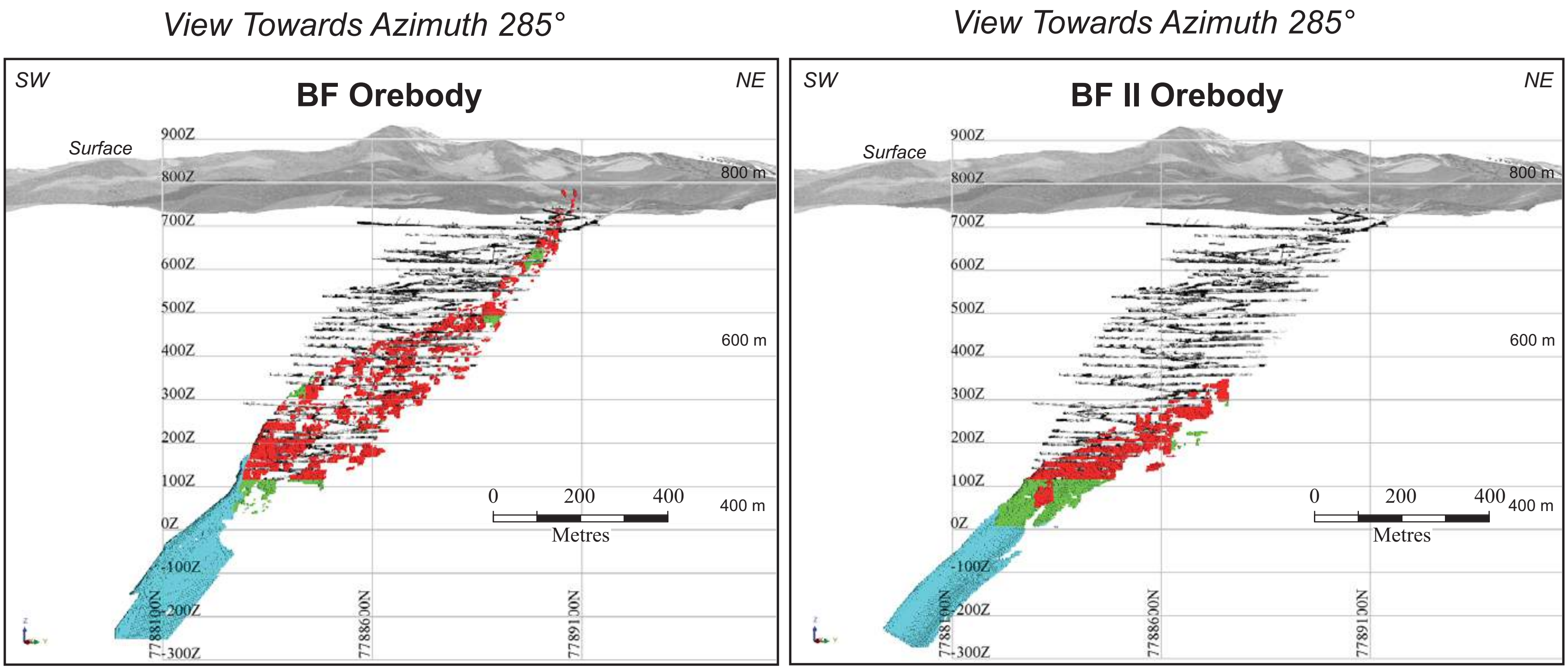
Categories of Inferred, Indicated, and Measured Mineral Resources are recognized in order of increasing geological confidence. However, Mineral Resources are not equivalent to Mineral Reserves and do not have demonstrated economic viability. There can be no assurance that Mineral Resources in a lower category may be converted to a higher category, or that Mineral Resources may be converted to Mineral Reserves. Inferred Mineral Resources cannot be converted into Mineral Reserves as the ability to assess geological continuity is not sufficient to demonstrate economic viability. Due to the uncertainty which may attach to Inferred Mineral Resources, there is no assurance that Inferred Mineral Resources will be upgraded to Indicated or Measured Mineral Resources with sufficient geological continuity to constitute Proven and Probable Mineral Reserves as a result of continued exploration.

There is a degree of uncertainty to the estimation of Mineral Reserves and Mineral Resources and corresponding grades being mined or dedicated to future production. The estimating of mineralization is a subjective process and the accuracy of estimates is a function of the accuracy, quantity, and quality of available data, the accuracy of statistical computations, and the assumptions used and judgments made in interpreting engineering and geological information. There is significant uncertainty in any Mineral Resource/Mineral Reserve estimate, and the actual deposits encountered and the economic viability of mining a deposit may differ significantly from these estimates. Until Mineral Reserves or Mineral Resources are actually mined and processed, the quantity of Mineral Resources/Mineral Reserves and their respective grades must be considered as estimates only. In addition, the quantity of Mineral Reserves and Mineral Resources may vary depending on, among other things, metal prices.

Any material change in quantity of Mineral Reserves, Mineral Resources, grade, or stripping ratio may affect the economic viability of a property. In addition, there can be no assurance that recoveries in small scale laboratory tests will be duplicated in larger scale tests under on-site conditions or during production. Fluctuation in metal or commodity prices, results of additional drilling, metallurgical testing, receipt of new information, and production and the evaluation of mine plans subsequent to the date of any estimate may require revision of such estimate. The volume and grade of reserves mined and processed and recovery rates may not be the same as currently anticipated. Estimates may have to be re-estimated based on changes in mineral prices or further exploration or development activity. This could materially and adversely affect estimates of the volume or grade of mineralization, estimated recovery rates, or other important factors that influence estimates. Any material reductions in estimates of Mineral Reserves and Mineral Resources, or the ability to extract these mineral reserves, could have a material adverse effect on the Jaguar's financial condition, results of operations, and future cash flows.

RPA has considered the Mineral Resource estimates in light of known mining, infrastructure, environmental, permitting, legal, title, taxation, socio-economic, marketing, political, and other relevant issues and has no reason to believe at this time that the Mineral Resources will be materially affected by these items.

It is RPA's opinion that the Pilar Mineral Resource estimates were prepared in a professional and diligent manner by qualified professionals and that the estimates comply with CIM (2014) definitions.



Domain Legend:
- *Measured*
- *Indicated*
- *Inferred*

Figure 14-35

Jaguar Mining Inc.

Caeté Operations
Pilar Mine
Minas Gerais State, Brazil
Longitudinal Projection of the Mineral Resources, BF & BF II Domains

April 2018

Source: RPA, 2018.

15 MINERAL RESERVE ESTIMATE

Table 15-1 summarizes the Mineral Reserves for Pilar Mine as of December 31, 2017 based on a gold price of US$1,250/oz. A break-even cut-off grade of 2.33 g/t Au was used to report the Mineral Reserves for the Pilar Mine. While small-scale mining of Mineral Resources continues at Roça Grade Mine, Mineral Reserves are not currently estimated.

TABLE 15-1 MINERAL RESERVES – DECEMBER 31, 2017
Jaguar Mining Inc. – Caeté Operations

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Proven	666	3.78	81
Probable	307	4.45	44
Total	**974**	**3.99**	**125**

Notes:
1. CIM (2014) definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated at a cut-off grade of 2.33 g/t Au.
3. Mineral Reserves are estimated using an average long-term gold price of US$1250 per ounce and a US$/BRL$ exchange rate of 3.5.
4. A minimum mining width of approximately 2 m was used.
5. Numbers may not add due to rounding.

RPA is not aware of any known mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimate.

It is RPA's opinion that the Pilar Mineral Reserve estimates were prepared in a professional and diligent manner by qualified professionals and that the estimates comply with CIM (2014).

DILUTION

Dilution is addressed in two ways – internal to mine designs and external factoring. Internal, or planned dilution is included in the design solids where they extend beyond the resource wireframe. This occurs in order to respect minimum width for development, or to keep stope walls to achievable outlines. Additional volume included in this manner averages approximately 15% across the Mineral Reserves.

External, or unplanned dilution accounts for overbreak during blasting, minor ground failures in open stopes, and backfill mucked up from the floor of stopes. It is addressed by applying percentage factors to various excavation types, as listed in Table 15-2:

TABLE 15-2 EXTERNAL DILUTION BY MINING METHOD
Jaguar Mining Inc. – Caeté Operations

Mining Method	Dilution (%)
Raising	10
Development	20
Cut & Fill	8
Longhole Stoping	10

Total dilution included in reserves averages approximately 25%, which is a good match for measured results for 2017 mining.

RPA recommends that efforts to reduce dilution continue, and measurements using cavity monitoring systems (CMS) be used to analyse dilution by mining type. Drilling from one direction will also help reduce dilution and underbreak in stopes. Measured results should be used to choose inputs to the reserve estimation process.

CUT-OFF GRADE

Mineral Reserves were estimated using a break-even cut-off grade of 2.33 g/t Au, calculated using the following inputs:

- Gold price of US$1,250/oz
- Exchange rate of US$1.00=R$3.5
- Metallurgical recovery of 90%
- Operating costs of R$295 per tonne

Metal prices used for reserves match well with consensus, long term forecasts from banks, and other independent financial institutions. Exchange rates are based on bank forecasts. Metallurgical recovery is in line with recent operating results, as are operating costs.

RECONCILIATION

The reconciliation values for Pilar and Roça Grande are presented in Tables 15-3 and 15-4, respectively. The reconciliation numbers for Roça Grande may suggest that further test work is required since there is a large discrepancy in amount of gold recovered.

TABLE 15-3 PILAR RECONCILIATION
Jaguar Mining Inc. – Caeté Operations

Period	PRODUCTION			3DBM (OK)			Difference 3DBM x Production		
	Mass (t)	Au (g/t)	Au (oz.)	Mass (t)	Au (g/t)	Au (oz.)	Mass (t)	Au (g/t)	Au (oz.)
2017									
Jan/17	26,078	3.50	2,935	27,433	2.75	2,426	5%	-21%	-17%
Feb/17	26,928	3.45	2,991	22,923	4.06	2,993	-15%	18%	0%
Mar/17	24,548	3.85	3,042	22,349	4.13	2,968	-9%	7%	-2%
Q1	77,554	3.60	8,968	72,705	3.59	8,386	-6%	0%	-6%
Apr/17	24,238	4.04	3,149	24,284	4.01	3,131	0%	-1%	-1%
May/17	29,207	3.20	3,010	29,290	3.41	3,212	0%	6%	7%
Jun/17	31,873	3.46	3,546	30,940	3.80	3,780	-3%	10%	7%
Q2	85,318	3.54	9,705	84,513	3.73	10,123	-1%	5%	4%
Jul/17	26,628	3.52	3,010	27,260	3.73	3,269	2%	6%	9%
Aug/17	30,495	3.67	3,601	27,949	4.18	3,757	-8%	14%	4%
Sep/17	31,828	4.48	4,590	29,856	4.44	4,262	-6%	-1%	-7%
Q3	88,951	3.92	11,201	85,066	4.13	11,288	-4%	5%	1%
Oct/17	29,450	3.73	3,527	26,750	3.76	3,234	-9%	1%	-8%
Nov/17	21,831	4.37	3,065	21,307	4.81	3,295	-2%	10%	8%
Dec/17	32,002	4.32	4,447	31,430	3.95	3,992	-2%	-9%	-10%
Q4	83,283	4.12	11,039	79,487	4.12	10,521	-5%	0%	-5%
Total	**335,106**	**3.80**	**40,914**	**321,771**	**3.90**	**40,319**	**-4%**	**3%**	**-1%**

For Pilar Mine, overall variation between Mineral Reserve estimates and production results are within accepted tolerances, indicating that estimation methodology is reasonable and effective.

TABLE 15-4 ROÇA GRANDE RECONCILIATION
Jaguar Mining Inc. – Caeté Operations

Month	Plant			Block Model			Difference BM x Production		
	Mass (t)	Au (g/t)	Au (oz.)	Mass (t)	Au (g/t)	Au (oz.)	Mass (t)	Au (g/t)	Au (oz.)
101-Jan	7,654	2.26	557	6,951	1.45	324	9%	36%	42%
102-Feb	4,588	2.31	341	4,362	1.68	235	5%	28%	31%
103-Mar	4,462	2.16	310	3,494	0.81	91	22%	62%	71%
104-Apr	6,325	2.16	439	5,912	1.57	299	7%	27%	32%

Month	Plant			Block Model			Difference BM x Production		
	Mass (t)	Au (g/t)	Au (oz.)	Mass (t)	Au (g/t)	Au (oz.)	Mass (t)	Au (g/t)	Au (oz.)
105-May	8,065	2.89	748	7,829	2.01	505	3%	30%	32%
106-Jun	4,963	1.87	299	4,999	1.52	244	-1%	19%	18%
107-Jul	5,681	2.36	430	5,595	1.77	318	2%	25%	26%
108-Aug	5,519	3.79	673	5,266	3.29	556	5%	13%	17%
109-Sep	6,647	2.86	611	6,454	3.57	741	3%	-25%	-21%
110-Oct	6,416	2.53	521	6,227	2.15	430	3%	15%	18%
111-Nov	5,014	2.23	359	4,957	2.52	402	1%	-13%	-12%
112-Dec	3,077	2.45	242	2,447	2.26	178	20%	8%	26%
Total	68,410	2.51	5,532	64,494	2.08	4,323	6%	17%	22%

For Roça Grande Mine, overall variation between block model estimates and production results are positive, however, a closer match to estimates is targeted. RPA notes that the small quantities of production involved may exacerbate differences between estimates and production.

16 MINING METHODS

The Caeté Gold Complex includes a processing plant at the Roça Grande Mine with a nominal capacity of 2,050 tpd, with separate tailings disposal areas for both fine flotation tailings and CIP tailings.

The Roça Grande Mine recently produced approximately 200 tpd, with production from Mineral Resources. Ore from Pilar Mine is transported by truck 45 km to the Caeté Gold Complex for processing. Recent production from Pilar Mine is approximately 1,000 tpd.

At Pilar Mine, gold mineralization is contained within a shear zone with an average 50º to 60º dip. The mineralization is structurally complex due to intense folding and displacements (up to one metre) due to local faulting. This results in direction changes and pinching and swelling of the vein over relatively short distances. The ore zone hanging wall (HW) and footwall (FW) contacts are visible by eye though sampling shows that there is, on occasion, an assay wall within the formation. The orebody is approximately 250 m to 350 m along strike and the orebody is mined along strike access via cross cuts perpendicular to the orebody.

MINING METHODS

There are two mining methods in use. The cut and fill method is utilized in the narrower sections of the deposit, whereas the longhole method is used in the thicker areas. The current LOMP forecasts longhole mining for a majority of the Mineral Reserves.

The mine is accessed from a five metre by five metre primary decline located in the footwall of the deposit. The portal is located at elevation 760 MASL. The mine is divided into levels with Level 01 established at elevation 690 m. Starting at this point, the vertical clearance is 75 m, i.e., Level 02 is at elevation 615 m, Level 03 at elevation 540 m, etc. A three-metre thick sill pillar is left between levels. Sublevels have also been excavated from the main ramp at 15 m vertical intervals to provide for intermediate access to the mining panels. The decline has reached Level 11, a vertical depth of approximately 650 m (Figure 16-1).

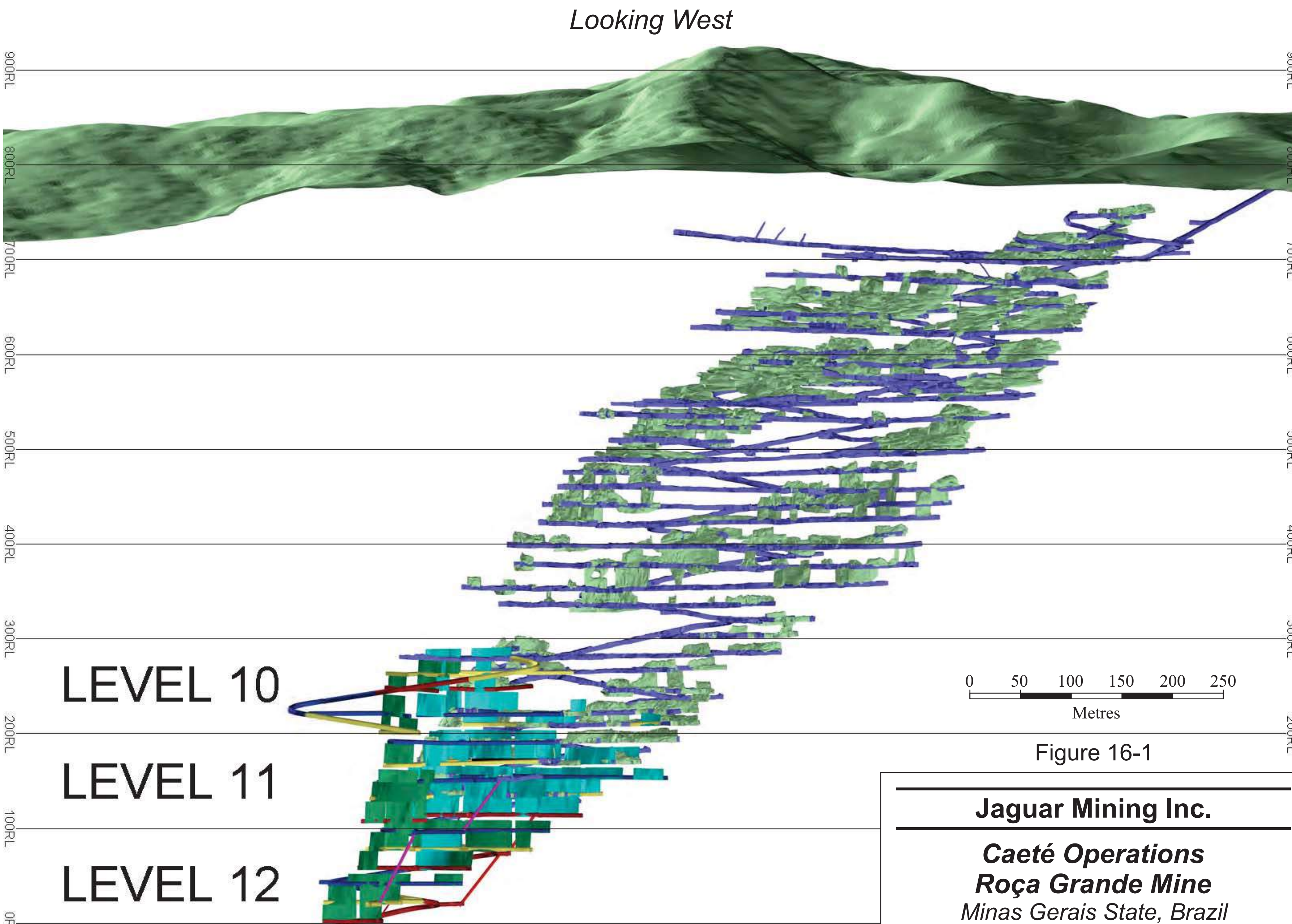


Figure 16-1

Jaguar Mining Inc.

Caeté Operations
Roça Grande Mine
Minas Gerais State, Brazil

Pilar Long Section

April 2018

Source: RPA, 2018.

RPA

www.rpacan.com

At each level and sublevel, drifts are developed near the centre of the mineralized zone to expose the FW and HW contacts. The drift is extended in both directions along strike, under geological control for alignment, continuing to expose the contacts until the limits of the deposit are reached. This provides for two working faces per sublevel.

Longhole mining is carried out on a longitudinal retreat sequence, towards the central access. Stopes are 50 m in length and separated by three metre to five metre wide pillars, depending on the thickness of the zone. When the mining of each longhole stope has been completed, the excavation is filled using a combination of development waste and hydraulically placed cemented classified flotation tailings. A drainage bund is constructed using development waste to contain the backfill. The backfill is then placed in the mined-out excavation. Once the cement is allowed to set, the next stope in the sequence is drained of excess water and can be mined. The sequence continues until the entire sublevel is mined. Mining then proceeds upward to the next sublevel and the sequence is repeated until the sill pillar is reached. Stopes are mined from several individual levels simultaneously in order to provide the required number of active workplaces needed to meet production targets.

For cut and fill mining, the level development is carried out to the extent of the ore, then backfilled. Once drained of excess water and allowed to cure, the access drift is back-slashed to allow vehicle access to the top of the backfill elevation. The subsequent cut is advanced using the breasting technique. Mining progresses in two directions from the access towards the ends of the orebody. Drilling of the breasts is completed using two-boom electric-hydraulic jumbos equipped with extension steel. This configuration allows for the normal 3.5 m long rounds to be extended to seven metres. Mucking is performed using six cubic yard Load-Haul-Dump (LHD) units and haulage to surface is by a fleet of off-highway surface trucks varying in size from 10 t to 25 t. Initial access to each mining panel is from the main level (at the base of the panel). As mining progresses, a 20% slope ramp is constructed in the fill to provide access to the next cut above the previously placed backfill. As this internal ramp is constructed, the roof immediately above it is raised, maintaining a clearance of 4.2 m. The excavation and backfill sequence is repeated until the next sublevel (15 m above) is reached. The sequence is then repeated for a total of five sublevels until the next level is reached.

Backfill is sourced from the filtered coarse portion of the flotation tailings from the Caeté Mining Complex mill, supplemented with available development waste. The filtered tailings are backhauled using the same highway trucks used to transport the ore from the mine to the mill. The fill is re-pulped on surface prior to being pumped underground.

MINE EQUIPMENT

The mine is highly mechanized. Development and mining activities are accomplished with a fleet of five two-boom electric-hydraulic jumbos. Longhole drilling is completed with two Atlas Copco Simba drills. Three six cubic yard LHD units are used for mucking. A fleet of eight Iveco 25 t trucks and four 10 t trucks are used to haul broken rock to surface. This type of truck was designed for surface use and are often found to be insufficiently robust for underground use. Mechanical availability of these units can be lower than normally observed with haulage trucks specifically designed for underground mining applications.

GROUND CONDITIONS

Ground conditions were observed by RPA to be good. The main decline, portions of which were developed up to ten years ago, did not exhibit any roof or wall deterioration. Primary support in the mine is provided by the use of split sets, grouted rebar and, in the wider areas, grouted cable bolts. Two single-boom electric-hydraulic jumbos are used for rock bolting.

LIFE OF MINE PLAN

Stope and development designs, and production scheduling were carried out by MCB using Deswik mine design software, and modified by Jaguar to deplete for stopes mined out as of December 31, 2017.

The production schedule covers a mine life of three years based on Mineral Reserves, and it is summarized in Table 16-1.

TABLE 16-1 LOMP PRODUCTION SCHEDULE
Jaguar Mining Inc. – Caeté Operations

Item	Units	2018	2019	2020	Total
Ore Tonnes	Tonnes (`000)	327	314	334	974
	g/t Au	4.18	4.01	3.79	3.99
Total Mill Feed	Tonnes (`000)	327	314	334	974
	g/t Au	4.18	4.01	3.79	3.99
	Ounces (`000)	43.9	40.3	40.6	125
Recovery	%	91%	91%	91%	91%
Gold Produced	Ounces (`000)	40	37	37	114

The current LOMP leaves significant capacity for processing more material, should it become available, or conversely, to explore cost saving measures at the plant such as weekend shutdowns or campaign milling.

17 RECOVERY METHODS

The Caeté processing plant has a design capacity of 720,000 tpa of run-of-mine (ROM) ore. In 2017, the plant processed feed from the Pilar and Roça Grande mines. Over the past three years of operation, the Caeté processing plant operated at approximately 60% of its design capacity.

The overall recovery achieved in 2017 was 90.3%.

The process flowsheet primarily consists of the following unit steps. A flow sheet is presented in Figure 17-1.

- Crushing
- Grinding
- Gravity Gold Recovery
- Flotation
- Leaching & Carbon-in-Pulp
- Gold Recovery
- Detoxification
- Tailings

CRUSHING

The ore from the Pilar and Roça Grande mines is transported by trucks to the crusher circuit and placed in the ROM stockpile. The crushing circuit is made up of a primary jaw crusher in open circuit, and secondary and tertiary cone crushers, operating in closed circuit.

The ROM stockpile ore is fed to the jaw crusher though a grizzly and vibrating feeder. The jaw crusher discharge feeds a multi deck screen, which feeds either the secondary or tertiary crushing circuit or the final product conveyor. The secondary cone crusher operates in closed circuit with a double deck screen. Product from the double deck screen either recirculates back to the secondary crusher, feeds the tertiary crusher, or goes to the final product conveyor. The tertiary cone crusher operates in closed circuit with a single deck scree, with the product recycling to the crusher or going to the final product conveyor, which goes to crushed ore stockpile. The final particle size of the crushing process is 16 mm.

GRINDING AND GRAVITY GOLD RECOVERY

The grinding circuit consists of a horizontal ball mill with a capacity of up to 100 tonnes per hour, operating in closed circuit with a series of hydrocyclones. The overflow from the hydrocyclones (-200 mesh (74 µm)) proceeds to the flotation circuit and the underflow (+200 mesh (74 µm)) either feeds the gravity concentration circuit (75%) or is recycled to the ball mill feed (25%).

Gravity concentration at the Caeté plant uses a centrifugal gravity concentrator (Knelson) to recover fine particles of free gold. The gravity concentrate proceeds to an intense cyanidation plant (Acacia), from which the gold bearing solution is pumped directly to a dedicated set of electrolytic cells. The precipitate from the cells is sent to a refinery for further processing into doré gold bars.

FLOTATION

The flotation circuit consists of a series of twelve 500 ft^3 flotation cells, the first three operating as roughers, three operating as primary scavengers, three operating as secondary scavengers, and the last three operating as tertiary scavenger cells. The concentrate produced by the secondary scavenger cells is returned to the rougher and the tertiary scavenger concentrate is recirculated to the primary scavenger circuit. The final gold bearing concentrate (90-95% -325 mesh (45 µm)), from the roughers and primary scavenger circuit is sent to a concentrate thickener for densification to approximately 40% solids (w/w). The thickener overflow is recycled for use as process water.

The tailings from the tertiary scavenger cells is sent to a series of hydrocyclones for separation. The cyclone underflow is sent back to the mine to be used as backfill. The cyclone overflow is sent to a tailings thickener, with the thickened underflow pumped to the RG2 West or East tailings area. The thickener overflow is recycled for use as process water.

LEACHING AND CARBON-IN-PULP GOLD RECOVERY

LEACHING

The concentrate thickener underflow slurry (40% solids w/w) is pumped to an agitated conditioning tank, where lime and cyanide are added, and then further pumped to a set of three agitated leach tanks operating by gravity, in series.

The lime is used to keep the pH above 10.0 to 10.5, in order to minimize the generation of deadly hydrogen cyanide gas. Cyanide is used to dissolve the gold from the solids in the slurry. Cyanide may be added to the leach tanks as well.

Oxygen, in liquid form, is introduced through spargers to enhance the dissolution of gold, and the oxidation of unstable sulphides (e.g., pyrrhotite). This oxidation reduces cyanide consumption and increases gold recovery.

The slurry from the last leach tank flows by gravity to a series of four CIP agitated tanks that are arranged in series.

CARBON IN PULP

The four CIP tanks are designed to hold activated carbon in each tank through a designed screen which allows slurry to flow from tank to tank, but retains the carbon in each tank. The carbon interacts with the slurry, adsorbing the gold cyanide complex created in the leach tanks. The slurry flows downstream from Tank 1 to Tank 4, while the carbon is pumped counter currently from Tank 4 to Tank 1. The pumping frequency is determined by the loading of gold on the carbon. The highest loaded carbon from Tank 1 is pumped over a screen, with the slurry returning to the tank and the gold loaded carbon going to gold recovery.

The slurry exiting the last CIP tank is sent to over a safety screen to recover any carbon that may have left the tank, and then to a detoxification circuit to remove cyanide.

GOLD RECOVERY

The gold loaded carbon is transferred to a desorption column. A hot solution (approximately 98°C) of caustic soda and 1% cyanide concentration is pumped upwardly through the elution column to remove or desorb the gold cyanide complex from the carbon.

The gold bearing solution leaves the top of the column and feeds the electrolysis cell, where the gold is deposited onto steel wool and stainless steel cathodes. The solution from the electrolysis cell is pumped back to the heating tank and reused. The solution is recirculated for approximately 24 hours to remove most of the gold from solution.

After the desorption cycle, the sludge, steel wool, and cathodes are withdrawn and sent to the refinery for production of gold doré containing about 80% gold. The doré gold is then further refined, obtaining pure gold bars (minimum 99.99%).

The desorbed carbon goes through an acid wash step using a 10% hydrochloric acid solution to remove carbonates. The carbon is then regenerated in a rotating dryer at 700° C to remove organic material, and return the carbon's ability to adsorb gold. This carbon is pumped to the last tank in the CIP circuit. Periodically fresh carbon is added to the tank, as some degradation will occur in the carbon, resulting in the need for replacement.

DETOXIFICATION

The cyanide detoxification process consists of adding hydrogen peroxide in the slurry as it flows by pipe to the Moita tailings area located approximately four kilometres from the plant. Mixing of the hydrogen peroxide occurs in the pipe. Residence time in the HDPE-lined dam results in the free cyanide levels generally falling below detection limit. Total cyanide levels, however remain high.

The water reclaimed from the ponded clear water passes initially through two activated carbon columns to recover any soluble gold left in solution. The activated carbon is periodically recovered and sent to the gold recovery circuit for gold removal.

The solution is then dosed with a copper sulphate solution and flocculant, allowed to settle in a decantation tank. The overflow is pumped back to the plant for use as process water, with the sludge drained back into the Moita tailings area.

TAILINGS

As mentioned before, the flotation tails are cycloned and sent to either underground for backfill or thickened and sent to the RG2 West or East(W/E) tailings area. Process water is pumped directly back to the plant.

The tailings from the CIP circuit are treated for cyanide removal and piped to the Moita tailings area. The reclaim water is treated to recover gold and further cyanide destruction, before being returned to the plant.

CONCLUSION

In RPA's opinion, the processing circuit unit operations are reasonable to recover gold and provide for adequate tailings treatment for cyanide destruction. Operations have improved over time, resulting in higher recoveries, however, full capacity has not been seen due to lack of plant feed.

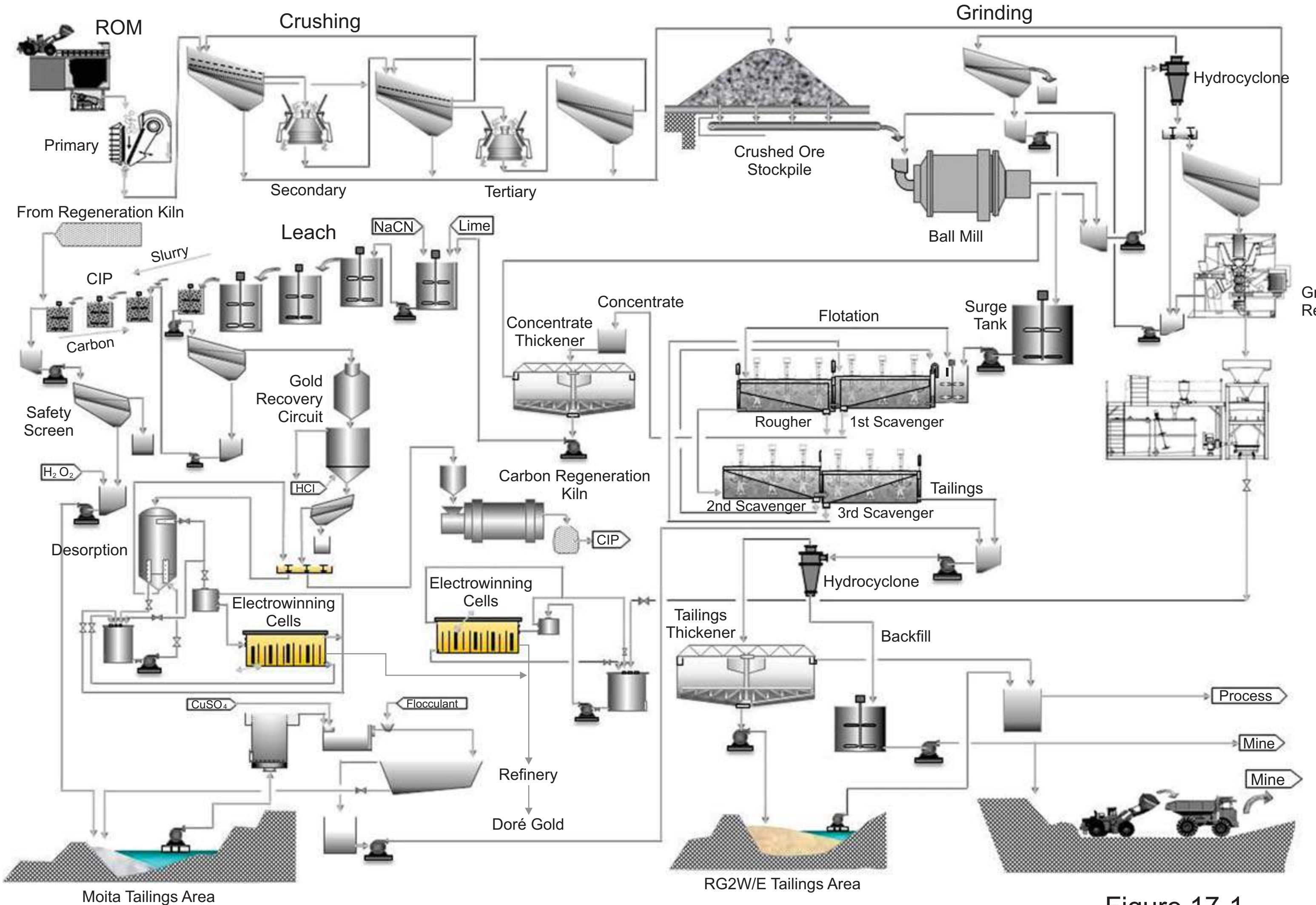


Figure 17-1

Jaguar Mining Inc.

Caeté Operations
Roça Grande Mine
Minas Gerais State, Brazil

Caeté Process Block Diagram

April 2018

Source: Jaguar Mining Inc., 2016.

18 PROJECT INFRASTRUCTURE

The Caeté Mining Complex includes a nominal 2,050 tpd processing plant with separate tailings disposal areas for both fine flotation tailings and CIP tailings. Electrical power supply is provided through the national power grid. The process plant is located at the Roça Grande Mine at an elevation of approximately 1,250 MASL.

An administration complex is located at the entrance to the plant site, with such ancillary buildings as offices, conference rooms, cafeteria, maintenance shops, compressors (mine and mill), a dry, a first aid station, warehouse, backfill preparation, and a water treatment plant, which is located near the process plant. The assay laboratory and process testing laboratory are also located near the process plant. The Roça Grande Mine is accessed by an adit that is located approximately 800 m to the southwest of the plant at an elevation of approximately 1,100 MASL. Trailers located at the mine adit provide local storage and office space. The explosives and blasting accessories warehouses are located 3.5 km away from the mine area, in compliance with the regulations set forth by the Brazilian Army.

The surface infrastructure at the Pilar Mine is limited to shops, offices, cafeteria, first aid, and warehouse facilities. The mine is accessed by an adit that is located at an elevation of approximately 750 MASL.

19 MARKET STUDIES AND CONTRACTS

Gold is freely traded, at prices that are widely known, so that prospects for sale of any production are virtually assured. A gold price of US$1,250 per ounce was used for estimating Mineral Reserves. RPA notes that this price is consistent with consensus long-term forecasts, and prices used by other gold producers.

20 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

PROJECT PERMITTING

ROÇA GRANDE MINE

TAILINGS DAM

MSOL began its mining activities at the Roça Grande Mine in August 2006 under the Corrective Operation Licence No. 333/2006 (COPAM process number 10022/2003/001/2005). This operating licence included the permit to operate a process plant to treat oxidized gold ore from the mines in the Sabará, Caeté, and Santa Barbara project areas, as well as feed from the RG2 open pit at the Roça Grande Mine.

The processing plant was decommissioned due to changes required in the mineral treatment process as the oxidized ore reserves were depleted. The processing of sulphide gold ores from the underground mines of the Caeté Project required construction of a new treatment plant that used the CIP-ADR process (Carbon in Pulp / Adsorption Desorption Recovery). This plant has been licensed through the process COPAM No. 10022/2003/002/2007.

As a result of this new treatment process, an updated design was required for the tailings storage area. The application of the Preliminary Licence for proposed new tailings storage areas was accepted by SUPRAM on July 7, 2007. A site visit was subsequently carried out by SUPRAM on October 4, 2007, SUPRAM. The operating licence was issued on November 29, 2007 by the certificate 029/2007, COPAM process 10022/2003/003/2007. This licence certified the environmental feasibility of storage of the process tailings in the previously excavated open pit mines at the RG2 deposit (RG2-W and RG2-E), together referred to as the Moita Pits (Cava do Moita).

Although the two old open pit mines were previously permitted for storage of process tailings from the first processing plant under the preliminary licence issued on November 29, 2007, MSOL required an update to the licence for the construction of the tailings storage facilities.

On June 27, 2008, MSOL obtained the installation licence which was issued on May 11, 2009, COPAM process 10022/2003/004/2008 and generated Certificate No. 077/2009.

The construction and commissioning of each of the separate tailings containment areas were carried out under a separate licensing process. After all construction was completed, an operating licence was requested on March 25, 2010 and Certificate No. 117/2010 was subsequently issued on April 31, 2010 (COPAM process 10022/2003/008/2010). It is to be noted that an APO (provisional operating licence) for the new tailings storage areas was issued on April 15, 2010 and this operating licence is currently being renewed.

RG2-W Storage Area

While the tailings from the new process plant were envisioned in the preceding environmental studies to be returned to the mines for use as backfill material in the stopes, it was determined that insufficient storage volume was being generated in the mines to accept the full volume of tailings generated. This required identification and construction of an additional storage area for the tailings from the flotation circuit which do not contain cyanide. A volume of approximately 418,000 m^3 was estimated to be required. The tailings are transported to the RG2-W containment area by means of pipelines. It is important to note that the RG2-W open pit does not have conventional characteristics of a tailings dam such as embankments, as it was excavated for the purposes of mining.

The application for the construction of the RG2-W tailings storage area was submitted on January 29, 2010. The construction licence was issued on May 31, 2010, COPAM process 10022/2003/007/2010, certificate number 114/2010. The licence process was formalized by MSOL on June 23, 2010. An APO for the site was issued on July 7, 2010 and the operating licence was issued on August 30, 2010 as certificate 201/210, COPAM process 10022/2003/010/2010. This operating licence is currently in the renewal process.

On May 16, 2013 MSOL initiated the licensing process for raising of the upstream portion of the RG2-W tailings dam. The licensing mode set by the regulatory agency granted concurrent preliminary and construction licences (LP + LI). This lift would raise the height of the dam to and elevation of 1,296 m and would increase the storage capacity of the facility by 354 m^3 to a total capacity of 884 m^3. The LP + LI was issued on October 29, 2013 under Certificate No. 170/2013, COPAM process 10022/2003/016/2013. On July 14, 2015, MSOL requested an operating licence for the new lift to 1,296 m. The request is currently under review by SUPRAM.

RG2-E Storage Area

On April 12, 2011, MSOL submitted an application for concurrent preliminary and construction licences for the expansion of the RG2-E tailings storage area, which is located within the former RG2 open pit mine.

In September 2011, SUPRAM surveyed the dam and the licence was issued on April 10, 2012. The operating licence was requested on October 7, 2013 and since January 27, 2014, the dam has operated through an APO.

PROCESS PLANT

The amended operation licence number 333/2006, COPAM process 10022/2003/001/2005, authorized the operation of the new decommissioned plant to process oxide gold ores. Due to the change of the process flowsheet to process the new feed stock from the underground mines, an application of a construction licence was filed with SUPRAM on April 17, 2007. SUPRAM surveyed the proposed plant site on July 2, 2007 and determined that the proposed new plant would occupy the same footprint as the previous plant and that there would be no further disturbance to either the surface or the vegetation.

The construction licence for the new processing plant was issued on January 4, 2008, certificate number 097/2008, COPAM process 1002/2003/002/2007. On March 25, 2010, MSOL made application for the operating licence which was subsequently issued on May 2, 2010, certificate number 090/2010, COPAM process 10022/2003/009/2010. An application for renewal of the operating licence was submitted by MSOL in January 2014, which is currently under review by the environmental regulatory agency, COPAM process 1002/2003/020/2014.

UNDERGROUND MINE

The underground mining activity at the Roça Grande Mine was authorized through two operating licences. Licence LO 035/2008 related to the RG1 deposit and licence LO 036/2008 relates to the development of the RG2 deposit.

Operating licence 035/2008, COPAM process 10022/2003/012/2011 was issued on April 16, 2008 and authorized the execution of underground mining activities on claim number 831.057/2010. It is to be noted that prior to this operating licence, the company had an Operation Environmental Authorization (AAF) No. 01109/2007 for the underground mining activity. The operating licence is currently in the renewal process through COPAM process 10022/2003/015/2012.

Operating licence 036/2008, COPAM process 22352/2011/005/2011 was requested on February 11, 2008 and was issued on April 16, 2008. This licence authorized the execution of underground mining activities on claim number 831.056/2010. It is to be noted that prior to this operating licence, the company had an Operation Environmental Authorization (AAF) No. 01109/2007 for the underground mining activity. The operating licence is currently in the renewal process through COPAM process 22352/2011/006/2012.

OPEN PIT MINES

On April 9, 2010, MSOL formalized the previously issued concurrent open pit construction and operating licences (LP + LI) for expansion of the existing open pit mines on claim 831.056/2010. This licence relates to open pit mining activity on the RG3 and RG6 deposits.

Both the LP + LI licences were administered under certificate 173/2010, COPAM process 22352/2011/003/2011 and the APO for the open pit expansions was issued on October 7, 2011. No activities are currently taking place at the open pit mines and the LP + LI request remains under review by the environmental agency.

WASTE ROCK STORAGE

The initial waste materials from the open pit mines were placed on waste piles previously constructed by Vale. The operating licence for that activity was issued on September 22, 2009. The material was placed in cells that were created using waste rock generated from the underground mine and was compacted by the passage of the mining equipment. MSOL constructed drain structures along the bottom and peripheries of the waste rock piles to control and manage the rainwater to the appropriate containment areas.

SUPRAM issued the operating licence on November 30, 2009 under certificate 298/2009, COPAM process 1002/2003/005/2009. A renewal of the operating licence was requested by MSOL on August 23, 2013, COPAM process 1002/2003/018/2013, and this renewal application is currently under review by SUPRAM.

On May 8, 2010, MSOL requested the LP + LI for the second expansion of the waste rock piles, as additional storage capacity was required after evaluation of the mining plans for the integrated operations. The LP + LI was issued on September 26, 2011 under certificate number 253/2011, COPAM process 10022/2003/017/2013. A provisional licence (APO) was issued on February 2017. The operating licence awaits the final decision from the environmental agency and an archeological search needs to be done in the area to complete the licensing process.

A summary of the environmental licences for the Roça Grande Mine is provided in Table 20-1 below.

TABLE 20-1 LIST OF EXISTING LICENCES, ROÇA GRANDE

Jaguar Mining Inc. – Caeté Operations

Enterprise	Certificate number	Process number (PA COPAM)	DNPM	Issue Date	Expiry Date	Observation
Tailings Dam – “Cava do Moita”	LO 117/2010	10022/2003/008/2010	NA	31/05/2010	31/05/2014	This licence is being renewed since 2014, COPAM process 10022/2003/020/2014
Tailing Dam – “RG2-W”	LO 218/2010	10022/2003/010/2010	NA	30/08/2010	30/08/2014	This licence is being renewed since 2014, COPAM process 10022/2003/020/2014
Tailing Dam – “RG2-E”	APO	10022/2003/019/2013	NA	27/01/2014	NA	Application for an operating licence under review by environmental agency
Plant	LO 090/2010	10022/2003/009/2010	NA	03/05/2010	03/05/2014	This licence is being renewed since 2014, COPAM process 10022/2003/020/2014
Underground mining – RG-01	LO 035/2008	10022/2003/012/2011	831.057/2010	16/04/2008	16/04/2012	This licence is being renewed since 2012, COPAM process 10022/2003/015/2012
Underground mining – RG-02	LO 036/2008	22352/2011/005/2011	831.056/2010	16/04/2008	16/04/2012	This licence is being renewed since 2012, COPAM process 22352/2011/006/2012
Open pit – DNPM 831.056/2010	APO	22352/2011/004/2011	831.056/2010	07/10/2011	NA	Application for an operating licence under review by environmental agency. This licensing process refers to RG-03 and RG-06.
Waste dump – First Expansion	LOC 298/2009	10022/2003/005/2009	NA	30/11/2009	30/11/2013	This licence is being renewed since 2013, COPAM process 10022/2003/018/2013
Waste dump – Second Expansion	LP+LI 253/2011	10022/2003/011/2010	NA	26/09/2011	26/09/2015	Operating licence requested on July 2013, COPAM process 10022/2003/017/2013.
Surface water pumping	Outorga 02725/2010	07024/2007	NA	11/11/2010	27/10/2015	This licence is being renewed since 2015, process 31767/2015. “Captação túnel Marembá” or “Captação túnel do Andre´”

PILAR MINE

The mining title for the Pilar Mine (claim 830.463/1983) initially belonged to the Companhia Vale do Rio Doce (VALE), which initiated the environmental licensing process in 1999 and obtained a preliminary licence for the open-pit mining of the oxidized ore. Due to strategic changes of VALE, they decided at that time to cease progress at the mining project.

In 2003, Vale transferred the mineral rights to the MSOL who then took over the environmental licensing process for the implementation of the open pit mining project. Thus, MSOL obtained the Preliminary Licence, Construction Licence, and finally, the Operating Licence on June 27, 2006, through the COPAM process N° 00132/1999/003/2005.

In preparation for permitting of the underground mine, MSOL acquired a preliminary licence for the activity by COPAM process 00132/1999/004/2007. SUPRAM issued the preliminary licence on August 16, 2007 under certificate number 021/2007.

MSOL subsequently carried out the required environmental studies and submitted an application for a construction licence under COPAM process number 00132/1999/006/2008. SUPRAM issued the construction licence for the mining and processing of sulphide ores by the CIP-ADR process flowsheet on August 25, 2008 under certificate number 152/2008.

On September 22, 2009, MSOL applied for an operating licence which was subsequently issued by SURPAM on June 30, 2010 under certificate number 153/2010, COPAM process 00132/1999/007/2009. On February 23, 2016, MSOL applied for a renewal of the operating licence, COPAM process 00132/1999/009/2016, and the renewal application is currently under review.

Operating licence LO 153/2010 is currently the only licence relating to the Pilar Mine. A list of the water permits is presented in Table 20-2.

TABLE 20-2 LIST OF EXISTING WATER PERMITS, PILAR
Jaguar Mining Inc. – Caeté Operations

Ordinance	Issue Date	Expiration Date	Procedure number	Watercourse	Permitted Rates	Status
00285/2008	08/04/2008	22/02/2013	02143/2006	Water well	1.4 m³/h	In revalidation process (1706/2013)
01543/2006	19/10/2006	19/10/2011	02973/2006	Conceição river	100.8 m³/h	In revalidation process (009155/2011)
02948/2011	07/10/2011	30/06/2016	05713/2010	Lowering water Level for Mining	98.08 m³/h	In revalidation process (5804/2016)

SOCIAL OR COMMUNITY REQUIREMENTS

CORPORATE SOCIAL RESPONSIBILITY

Understanding the concerns of our stakeholders is crucial to develop relevant actions and ensure sustainable performance, in this way; the social actions reinforced the company's commitment toward sustainability. The Jaguar always work closely with the communities, building upon its 2016 Sustainability Guideline as the main cornerstone. Through this Guideline, the company strives to devise new local development processes by integrating cultural, social, environmental and financial aspects, in addition to valuing tangible and intangible resources in the areas where we operate.

Creativity, collaboration and sharing are some of the values that guide Jaguar's relationships and interactions. This is defining how we propose initiatives and engage in the work of entrepreneurs working to improve people's lives in the communities. Based on this goal, the company intensified its involvement in local projects, focusing on the needs and interests of community organizations. The company also refined its dialogue with public authorities and civil society, ultimately benefiting everyone involved.

All of this effort is evidenced by the results of initiatives proposed by the company. A good example is the Seeds of Sustainability Program, which is undoubtedly Jaguar's most important social initiative, which was restructured to ensure a more efficient and organized management, helping develop local projects. By increasing the focus on the community's needs, the company was also able to streamline its initiatives and ultimately contributing towards achieving the UN's Sustainable Development Goals. Together, these projects directly benefit approximately 1,500 people.

In 2017, Jaguar invested a total of BRL 924,448.00 in social projects – BRL 374,674.00 in sponsorships and support to local initiatives, and BRL 549,774.00 in infrastructure. The website www.sementesdasustentabilidade.com.br, developed in 2017, provides more details on the program and institutions being funded, as well as new opportunities and potential partnerships.

CCA COMPLEX

The CCA Complex are located in the cities of Caeté (Roça Grande Mine) and Santa Barbara (Pilar Mine), both located in Minas Gerais state. As a result of the ore transport route for the ore from the Pilar Mine, there is also an impact in the city of Barão de Cocais, that is located between the two municipalities.

ROÇA GRANDE MINE

The city of Caeté is located approximately 48 km east of Belo Horizonte and has a territory of 542.571 km^2. According to the most recent census, the population is estimates as 43,739 residents. Caeté is a historic town of over 300 years of age and its biggest feature is the religious tradition. Its main tourist attraction is the Serra da Piedade, a mountain with a peak of 1,746 meters above sea level. There, a Catholic shrine is present that shelters the Patroness of Minas Gerais and which receives pilgrims throughout the year. In the same locale sits the Astronomical Observatory Frei Rosário, an initiative of the Federal University of Minas Gerais.

Jaguar's Roça Grande Mine is located a slight distance from the urban area and has very little impact of neighbouring communities due to its isolated nature, which greatly facilitates the operation. Up to 2013, the ore coming from Pilar Mine was transported through the streets of Caeté, which caused considerable damage to asphalt and discomfort to the population. Because of this impact, Jaguar donated an asphalt plant to the municipality in compensation for the impact to the city. After a major negotiation with the city of Barão de Cocais, an alternate route was created that brought significant cost savings regarding the ore transportation and in obtaining the social licence. In 2017, Jaguar invested one more time in other alternative route, to reduce the distance between the metallurgical plant in Caeté and the Pilar Mine. This change was considered also to the reduce impacts in the communities since the route using nowadays has less houses than the older.

Since beginning operations, Jaguar has developed several environmental education programs with local schools, training courses for mining in cooperation with the town council, and supports the Santa Casa de Saúde, the main hospital in the region. Together with the city council, annually in honor of International Women's Day, free mammograms are donated. In addition, the company supports the municipality in various religious events that are part of the city's tradition.

In 2015 the city of Caeté lived with a water crisis and Jaguar donated to the Autonomous Service of Water and Sewage (SAAE) 3,000 hydrometers to help estimate the losses between the production and distribution of water.

At the last two years, Jaguar invested around R$ 80.000,00 in the Seeds of Sustainability Program to provided services consulting to participating organizations to: develop projects and services; training and mediates interactions with local entrepreneurs in incentive and funding mechanisms; help to map, mobilize and reinforce a network of partners for participating initiatives; promoting organizations by establishing communication channels and organizing partner & support networks. More than merely providing financial support, the Seeds of Sustainability Program promotes the work of local projects and organizations to develop the cultural, socio-environmental and financial aspects of its communities.

The Seeds of Sustainability Program allowed participating organizations to make major strides towards restructuring and managing its activities. An example is Pró-Amor Cultural Center, an institution which works to promote and integrate the community of the São Benedito district through art and culture, in activities such as arts and crafts, ballet, music, theater, and urban dancing classes. With the consulting of the Program, the Cultural Center received 42,000 Brazilian reais from FIA (Childhood and Adolescence Found) and the Barão Cocais Court of Justice. Pró-Amor is now preparing to launch new projects to broaden its social reach in 2018, making a difference in the lives of children, teenagers, and the community as a whole.

PILAR MINE

Sitting at an altitude of 732 meters, Santa Barbara has a history of mining within Minas Gerais. It is located approximately 98 km east of Belo Horizonte. Santa Barbara has an estimated population of 27,876 inhabitants and 684.060 km² of area. Situated at the foot of the impressive Serra do Caraça - Natural Heritage Private Reserve (NHPR), Santa Barbara is considered as one of the most beautiful towns in Minas Gerais. With a history of more than

300 years, the city is known by its religious and entrepreneurial traditions. The entrepreneurial potential of its people is visible and its economy is based on mining of iron and gold, on the production of honey and derivatives. In addition, reforestation activities for production of cellulose and charcoal are important.

Jaguar's operations in Santa Barbará have direct interference with three communities: Brumal, Beco do Pau Comeu and André do Mato Dentro.

Brumal is situated in front of the main entrance of the mine site, across the state highway MG 436. Due to the physical proximity with this community, some complaints of detonations and trucks noise are registered. But in daily operation the company makes it possible to minimize these impacts and maintains constant dialogue with the community. Since Jaguar´s involvement, various social and cultural projects were supported as well as environmental education programs in schools in the region and every year support the “Cavalhada de Brumal”, an event held for over 81 years.

Other important project supported by the Seeds of Sustainability Program is the “Tecelãs de Brumal”, created by a group of women from the community, who use loom weaving as source of income and instrument of citizenship. One of the main initiatives last year was a sponsorship of 10,000 Brazilian reais for weavers to purchase raw materials and increase production. Jaguar also leveraged the group’s participation at the Multi-sector Fair of Santa Bárbara, sponsoring the local artists’ stand. The collection “Essências Nativas da Mata Atlântica” (Native Essences of the Atlantic Forest) was also launched during the event. The collection was inspired by a colour palette based on the species of trees chosen at the "Clique Árvore" [Tree Click] contest of the Spring Recovery Project [Programa de Recuperação de Nascentes].

The Spring Recovery Project is an important environmental program supported by Jaguar in the region of Brumal. Created in 2016 by residents of the community, their goal is to recover and preserve 13 water springs on the district’s outskirts. In 2016 and 2017 the company invested 100,000 Brazilian reais planting native trees in the permanent spring preservation area outlined in the project, installing and maintaining fences to protect the springs from animal intrusion. In addition, Jaguar partnered with local schools to preserve the springs by teaching the importance of vegetation in protecting watercourses.

The Beco do Pau Comeu stay behind the Pilar Mine, where only 8 families live. This community belong to Brumal that is located in a valley, facing drainage problem. Due to the low-lying nature of the area is becomes swampy during the rainy season, and floods are constant. To help Beco do Pau Comeu, the company developed the project of readjusting drainage and performed works in partnership with the city hall, solving the floods in this place. Because of this initiative, the company was congratulated in the City Council to commit to doing the civil work of public utility.

In André do Mato Dentro, a good relationship with the community is also observed, the main agreement with this community is cession of passage that the community has given to the company. In return, Jaguar performs maintenance on a stretch of access road that connects this community and the cities of Caeté and Santa Barbara. Another project supported by Jaguar in the locality is the traditional “Festa de São Geraldo” that has the participation of Women Cavalhada.

Positive socioeconomic impacts are observed in all locations, including Barão de Cocais, through generation of employment and income through local labor hiring by Jaguar and its subcontractors.

MINE CLOSURE REQUIREMENTS

Two years before the mine is exhausted, the company must present the “Plano de Fechamento de Mina” (Mining Closure Plan, or PAFEM) to SUPRAM for approval, according to the “Deliberação Normativa COPAM nº 127”. This regulation enforces that all mining activities in the state of Minas Gerais must include the rehabilitation plan of degraded areas and defines its reference terms.

The actions and steps for the environmental recovery of the areas impacted by mining activity were adopted when the LI was granted and will continue until after the mine is exhausted.

Progressive rehabilitation and closure activities have not been scheduled for 2018. Going forward, from 2019 to 2026, the estimated costs for progressive rehabilitation and reclamation accounts for R$17 million for Roça Grande and R$9.6 million for Pilar Mine (Table 20-3).

TABLE 20-3 PROGRESSIVE REHABILITATION AND CLOSURE COST ESTIMATES
Jaguar Mining Inc. – Caeté Operations

Roça Grande Mine and CCA Plant R$ (000)

Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Waste Pile	262,500											262,500
Pit	81,000											81,000
Dam		1,009,225	246,000									1,255,225
Infrastructure	325,000	1,900,050	2,100,230	188,417								4,513,697
Plant		2,400,100	2,520,000	187,320								5,107,420
G&A	843,090	696,000	577,500	490,000	656,500	66,568						3,329,658
Contingency	256,970	1,020,914	925,434	147,175	111,605	11,317						2,473,415
Total	**1,768,560**	**7,026,289**	**6,369,164**	**1,012,912**	**768,105**	**77,885**						**17,022,915**

Pilar Mine R$ (000)

Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Waste Pile			295,906									295,906
Pit												0
Dam												0
Infrastructure	83,000	57,600	31,487	1,946,065								2,118,152
Plant			121,700									121,700
G&A	104,850	55,032	249,000	1,096,000	968,000	1,131,000	1,090,001	1,010,000				5,703,883
Contingency	31,935	19,147	118,676	517,151	164,560	192,270	185,300	171,700				1,400,739
Total	**219,785**	**131,779**	**816,768**	**3,559,216**	**1,132,560**	**1,323,270**	**1,275,301**	**1,181,700**				**9,640,379**

21 CAPITAL AND OPERATING COSTS

CAPITAL COSTS

Sustaining capital estimates for the Caeté Mining Complex were prepared by Jaguar and include primary access development, mine equipment replacement, plant equipment replacement, tailings dam expansion, and mine closure.

TABLE 21-1 CAPITAL COSTS (US$'000S)
Jaguar Mining Inc. – Caeté Operations

Description	2018	2019	2020	2021+	Total
Exploration	468				468
Primary Development	7,004	4,875			11,879
Sustaining Mining	1,341	1,341	1,341		4,024
Sustaining Mill	153	153	153		459
Raise 1.8m Dia.	6	98			104
Closure		568	2,045	5,005	7,618
Total	**8,972**	**7,035**	**3,539**	**5,005**	**24,552**

OPERATING COSTS

Operating cost estimates for the Caeté Mining Complex were prepared by Jaguar, based on recent actual costs, and include mining, processing, and general and administration (G&A) expenses. Table 21-2 summarizes unit operating costs.

TABLE 21-2 UNIT OPERATING COSTS
Jaguar Mining Inc. – Caeté Operations

Description	Units	2017	2018	2019	2020	Total
Mining	US$/t milled	29.20	29.20	29.20	29.20	29.20
Secondary Development	US$/t milled	43.08	43.08	43.08	43.08	43.08
Processing	US$/t milled	11.31	11.31	11.31	11.31	11.31
G&A	US$/t milled	10.42	10.86	10.21	10.21	10.49
Total	**US$/t milled**	**94.02**	**94.46**	**93.80**	**93.80**	**94.09**

RPA reviewed the cost estimates in comparison to recent operating results, and found them to be reasonable.

22 ECONOMIC ANALYSIS

This section is not required as Jaguar is a producing issuer, the property is currently in production, and there is no material expansion of current production. RPA reviewed a LOMP cash flow model that confirms the economic viability of the Mineral Reserves, at a gold price of US$1,250/oz and an exchange rate of US$1.00=BRL3.5.

23 ADJACENT PROPERTIES

RPA is not aware of any relevant adjacent properties.

24 OTHER RELEVANT DATA AND INFORMATION

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

25 INTERPRETATION AND CONCLUSIONS

Measured and Indicated Mineral Resources at Pilar have increased year-over-year, due to positive diamond drilling results and updated resource modelling, while Mineral Reserve estimation replaced depletions from production. The LOMP for the Caeté Gold Complex forecasts a mine life of three years, and production of approximately 40,000 ounces per year. The plant has capacity to process more ore, should it become available.

Conclusions by area are discussed in more detail below.

GEOLOGY AND MINERAL RESOURCES

ROÇA GRANDE MINE

- The mineralization at the Roça Grade Mine consists of a number of thin, moderately dipping tabular bodies. These tabular bodies are grouped into five Orebodies (RG01, RG02, RG03, RG06, and RG07).

- The main production of the mine has been from the RG01 and RG07 Orebodies, although a small amount of gold was produced by means of open pit mining from the RG03 and RG06 Orebodies. The RG01, RG02, RG03, and RG06 Orebodies are strataform to stratabound mineralized portions of a BIF assemblage which dip moderately to the southeast. The RG07 Orebody is comprised mostly of a quartz vein which is hosted by a BIF.

- The updated Mineral Resource estimate for the Roça Grande Mine was prepared based on drilling and channel sample data using a data cut-off date of June 30, 2015. The database comprises 649 drill holes and 6,517 channel samples. The estimate was generated from a block model constrained by 3D wireframe models that were constructed using a minimum width of one metre. The purpose of the minimum width criteria was to attempt to identify any areas of high grade mineralization that could be candidates for extraction using highly selective underground mining methods. A minimum width criteria was subsequently applied to the Mineral Resource reporting criteria by using a minimum grade times thickness product of 3 gram-metres. Raw assays were capped to 30 g/t Au for the RG01 and RG06 Orebodies while a capping value of 50 g/t Au was applied for the RG02, RG03 and RG07 Orebodies. The Mineral Resources are reported using the gold grades estimated by the ID^3 method. The wireframe models of the mineralization remained unchanged from 2015. The wireframe models of the excavated volumes for the Roça Grande Mine were constructed using the information available as of December 31, 2017.

- The mineralized material for each Orebody was classified into the Measured, Indicated, or Inferred Mineral Resource categories on the basis of the search ellipse ranges obtained from the variography study, the observed continuity of the mineralization, the drill hole and channel sample density, and previous production experience with these orebodies.

- The Mineral Resource reports were prepared by creating clipping polygons that were used to ensure that the requirement for spatial continuity is met. The reporting polygons were prepared in either plan or longitudinal views, as appropriate. They were drawn to include continuous volumes of blocks whose estimated grades were above the stated cut-off grade, were located completely within the boundaries of Jaguar's mineral rights holdings at the Roça Grande Mine, possessed a grade times thickness product of at least 3 gram-metres, and were not located in mined out areas. These resource polygons were also used to exclude isolated blocks with limited to no spatial continuity but containing grades above the nominated cut-off.

- At a cut-off grade of 1.46 g/t Au, the Measured and Indicated Mineral Resources at the Roça Grande Mine total 1.09 million tonnes, at a grade of 2.77 g/t Au, containing 97,000 ounces of gold. In addition, Inferred Mineral Resources total 1.76 million tonnes, at a grade of 3.48 g/t Au, containing 197,000 ounces of gold.

PILAR MINE

- The mineralization at the Pilar Mine comprises a number of sub-parallel, quartz-rich mineralized lenses which have an average strike of 015°, and dip steeply to the east with an average dip of 65°. The available drill hole information suggests that the dip of the mineralized zones may begin to flatten to approximately 45° below the 120 m elevation. Three of the mineralized zones (BA, BF, and BF II) have been identified by drill hole and channel sample data to be isoclinally folded, with fold axes that plunge at approximately -40° to the southwest (approximately azimuth 210° to 225°). Many of the remaining mineralized zones (LFW, LPA, LHW, and the Torre Orebodies) are interpreted to be more tabular in overall form. The LPA zone resides in the axial plane of the folded BF zone and thus provides evidence for multiple ages of gold mineralization.

- Examination of the three dimensional relationship of the Torre Orebody to the modelled outline of the BIF units shows that the overall dip of this mineralization gradually decreases with depth. This occurs with a change from the BIF to the enclosing chlorite schist units, such that an increased level of vigilance will be required of the core logging geologists to recognize and correctly sample potentially economic mineralization that is located by host rocks other than the BIF.

- Diamond drilling programs carried out in 2016 and 2017 were successful in outlining significant gold grades across mineable widths along the down-plunge continuations of the BA, BF, and BF II Orebodies, below the current active mining areas. The results from these drill holes have been incorporated into the updated block model. Additional work that will provide further detailed information of the gold distribution in this area is warranted and justified.

- As a result of the additional information collected from the recently completed drilling programs, along with production information collected from detailed mapping and sampling programs, the level of understanding of the relationship of the mineralized zones to the host stratigraphy and structure is increasing.

- The updated Mineral Resource estimate for the Pilar Mine was prepared based on drilling and channel sample data using a data cut-off date of November 28, 2017. The database comprises 1,366 drill holes and 19,838 channel samples. The estimate was generated from a block model constrained by 3D wireframe models that were constructed using a minimum width of two metres. Raw assays were capped to 10 g/t Au for the LHW lenses, 20 g/t Au for the LFW, LPA and SW Orebody lenses, 30 g/t Au for the BF II and C Orebody lenses and 60 g/t Au for the BA and BF Orebodies. Gold grades were estimated using the inverse distance cubed (ID^3) and ordinary kriging (OK) methods. The wireframe models of the mineralization and excavated material for the Pilar Mine were constructed using the excavation information as of December 31, 2017.

- The mineralized material for each wireframe was initially classified into the Measured, Indicated, or Inferred Mineral Resource category on the basis of the search ellipse ranges obtained from the spatial continuity study, the demonstrated continuity of the gold mineralization, the density of drill hole and chip sample information, and the presence of underground access. A post-processing clean-up step was applied in a final stage of the classification process to ensure continuity and consistency of the classified blocks in the model.

- Reconciliation studies carried out using the short-term block model for the 2016 and 2017 production period clearly demonstrate that the sampling and assaying protocols, along with the block model estimation work flow are producing reliable predictions of the tonnage and grade received at the processing plant.

- Additional Mineral Resources are present that reside beyond the Mineral Reserves outlines as a result of the lower cut-off grade used for reporting of Mineral Resources. These are located as remnants above Level 11 (the limit of the current development) or as additional mineralized areas peripheral to the Mineral Reserve outlines in areas located below the current development. Three-dimensional resource polygons were prepared to aid in the estimation and reporting of the Mineral Resources to ensure that the requirement for spatial continuity is met. The reporting polygons were prepared in either plan, section or longitudinal views, as appropriate. They were drawn to include continuous volumes of blocks whose estimated grades were above the stated cut-off grade, and were not located in mined out areas. These resource polygons were also used to exclude isolated blocks with limited to no spatial continuity but containing grades above the nominated cut-off. These resource polygons were used to appropriately code the block model and were used to report the Mineral Resources.

- At a cut-off grade of 1.93 g/t Au, the Measured and Indicated Mineral Resources at the Pilar Mine total 3.79 million tonnes, at a grade of 4.37 g/t Au, containing 532,000 ounces of gold. In addition, Inferred Mineral Resources total 2.37 million tonnes, at a grade of 5.69 g/t Au, containing 433,000 ounces of gold.

MINING AND MINERAL RESERVES

ROÇA GRANDE MINE

- Although small amounts of production were realized from the Roça Grande Mine in 2016 and 2017, Mineral Reserves are not currently estimated.

PILAR MINE

- At a cut-off grade of 2.33 g/t Au, the Proven and Probable Mineral Reserves at the Pilar Mine comprise 0.97 million tonnes at an average grade of 3.99 g/t Au containing 125,000 ounces of gold.

- Total dilution included in reserves averages approximately 25%, which is a good match for measured results for 2017 mining.

- The LOMP for Pilar Mine forecasts three years of production, at rates ranging from 800 tpd to 1,100 tpd. Gold production is forecast to average 40,000 ounces per year.

- RPA reviewed a LOMP cash flow model that confirms the economic viability of the Mineral Reserves, at a gold price of US$1,250/oz and an exchange rate of US$1.00=BRL3.5.

- It is RPA's opinion that the Pilar Mineral Reserve estimates were prepared in a professional and diligent manner by qualified professionals and that the estimates comply with CIM (2014) definitions.

PROCESSING

- In RPA's opinion, the processing circuit unit operations are reasonable to recover gold and provide for adequate tailings treatment for cyanide destruction. Operations have improved over time, resulting in higher recoveries, however, full capacity has not been tested due to lack of plant feed.

ENVIRONMENT AND PERMITTING

- RPA is not aware of any environmental liabilities on the property. Jaguar has all required permits to conduct the proposed work on the property. RPA is not aware of any other significant factors and risks that may affect access, title, or the right or ability to execute the proposed LOMP on the property.

LIFE OF MINE PLAN

- The current LOMP leaves significant capacity for processing more material, should it become available, or conversely, to explore cost saving measures at the plant such as weekend shutdowns or campaign milling.

- RPA reviewed capital and operating cost estimates prepared by Jaguar, and found them to be reasonable.

26 RECOMMENDATIONS

RPA's recommendations by area are summarized below.

GEOLOGICAL DATA

- Continue preparation and updating of the written procedures for such tasks as the collection of geological and sampling information, database management and administration, and preparation of Mineral Resource estimates.

- Continue with database validation exercises focusing specifically on reducing the error rates for the collar and survey tables in the drill hole database.

- Carry out a program of re-sampling be undertaken where any un-sampled intervals that are located within the mineralized wireframe boundaries be re-sampled, as the availability of drill core permits.

- Update the drill hole sampling protocols to ensure that full sampling coverage is obtained for all mineralized zones as part of the normal-course logging and sampling procedures. Preparation of current drill hole plans and sections by the logging geologist in either physical or digital format that show the location of the current drill hole relative to the remainder of the drilling information will greatly assist in achieving this goal.

- Amend the data management protocols to include the secured archiving of all digital information that was used to prepare any Mineral Resource or Mineral Reserve estimates on the Jaguar server(s). Primary copies of all digital files could be archived in secured folders on the servers at each of the mine sites, while duplicate copies of all digital files could also be stored in secured folders on the Jaguar Corporate server located in Belo Horizonte.

ASSAY LABORATORY

- The certificate number for each assay batch should be included into the central BDI database.

- The central BDI database should be updated to store drill core recovery, channel sample recovery, and sample tracking (lost sample) information. This will assist in deciding how to address null values in future resource estimates.

- The QA/QC program should be amended to include the channel samples.

- At present the pulverizers are cleaned with compressed air and a polyester fibre brush after each sample. As a minimum, the pulverizers should be cleaned with a wire brush. No special protocols are in place to clean the pulverizers after passing a sample of known high gold grade. The pulverizers should be cleaned with silica sand after processing each known high grade sample.

- All gold grades are determined by FA–AA. The AA unit is currently calibrated to direct-read gold values up to 3.3 g/t. Any samples containing gold values in excess of this are analyzed by diluting the solute. High grade samples should be determined using a gravimetric method.

- The assay laboratory automatically re-assays all samples containing gold grades greater than 30 g/t Au, and the average of the re-assays are reported to the sites. All sample results should be reported to the site, without averaging.

- The threshold of 30 g/t Au is high. Re-assay thresholds of 10 g/t Au to 15 g/t Au are commonly used in other gold operations.

- The results from assays of all aliquots be reported by the laboratory and recorded in the drill hole database. The current database structure will require slight modification to allow for recording of all assay results for a given sample. The final assay for the sample will then be the average of all of the assay results.

MINERAL RESOURCES

- Structural mapping information should be integrated with isopach maps of the carbonate iron formation at the Roça Grande Mine and trend analyses of the gold distribution to identify any primary controls on the distribution of the BIF-hosted gold mineralization.

- Preparation of a detailed geological model for the Roça Grande Mine will aid in understanding the controls on the distribution of the gold mineralization.

- Preparation of a three dimensional model of the major regional fault encountered in the Vale railroad tunnel using all available data will greatly assist in development of exploitation strategies for the Mineral Resources contained within the RG02 Orebody at the Roça Grande Mine.

- Execution of a detailed geological and structural mapping program at the Pilar Mine is warranted. This information will assist in furthering the understanding of the detailed relationships between the host rocks and timing of the various episodes of mineralization and faulting.

- Continued collection of detailed density measurements of the mineralization at the Roça Grande and Pilar mines is warranted.

- In-fill drilling on the RG01 Orebody along the down-plunge projection of the encouraging drilling results is warranted.

- In-fill drilling of the mineralization found below Level 11 at the Pilar Mine is warranted. The goal of this drilling program is to increase the confidence in the distribution of the mineralization and to assist in the preparation of mine schedules.

- A detailed geological review of the controls on the mineralization contained within the SW Orebody at the Pilar Mine should be carried out to aid in selecting high priority areas for future exploration programs.

- Amendment of the cut-off grade strategy used for preparation of the mineralization wireframes is warranted to better reflect the potentially economic in-situ gold grades. As a minimum, mineralization wireframes should be created using the incremental cut-off grade for the Pilar and Roça Grande mines, respectively.

- Expand the reconciliation procedures to include an evaluate the accuracy of the long-term block model relative to the short-term block model to begin to gauge the optimal drill hole spacing required for preparing Mineral Resource estimates.

- Use of a partial percentage attribute in the block models for the mined out volumes will aid in improving the reconciliation results.

- A detailed evaluation of those Mineral Resources contained within the area of the current mine workings as possible additional feed sources at both the Pilar and Roça Grande mines is warranted.

MINERAL RESERVES

- Efforts to reduce dilution should continue, and measurements using CMS should be used to analyze dilution by mining type. Measured results should be used to choose inputs to the reserve estimation process.

LIFE OF MINE PLAN

- Review alternative feed sources to utilize unused capacity at the process plant.

- Review alternatives for the plant operating schedule.

- Review the remnant resources above the current mining horizon and determine what can be added to the LOMP and converted to Mineral Reserves.

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28 DATE AND SIGNATURE PAGE

This report titled "Technical Report on the Roça Grande and Pilar Mines, Minas Gerais State, Brazil" and dated April 17, 2018 was prepared and signed by the following authors:

(Signed and Sealed) ***"Reno Pressacco"***

Dated at Toronto, ON
April 17, 2018

Reno Pressacco, P.Geo.
Principal Geologist

(Signed and Sealed) ***"Jeff Sepp"***

Dated at Toronto, ON
April 17, 2018

Jeff Sepp, P.Eng.
Senior Mining Engineer

29 CERTIFICATE OF QUALIFIED PERSON

RENO PRESSACCO

I, Reno Pressacco, M.Sc (A)., P.Geo., as an author of this report entitled "Technical Report on the Roça Grande and Pilar Mines, Minas Gerais State, Brazil", prepared for Jaguar Mining Inc. and dated April 17, 2018, do hereby certify that:

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

2. I am a graduate of Cambrian College of Applied Arts and Technology, Sudbury, Ontario, in 1982 with a CET Diploma in Geological Technology, Lake Superior State College, Sault Ste. Marie, Michigan, in 1984, with a B.Sc. degree in Geology and McGill University, Montreal, Québec, in 1986 with a M.Sc.(A) degree in Mineral Exploration.

3. I am registered as a Professional Geologist in the Province of Ontario (Reg. #939). I have worked as a geologist for a total of 32 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Review and report as a consultant on numerous exploration and mining projects around the world for due diligence and regulatory requirements, including preparation of Mineral Resource estimates and NI 43-101 Technical Reports.
   - Numerous assignments in North, Central and South America, Finland, Russia, Armenia and China in a variety of deposit types and in a variety of geological environments; commodities including Au, Ag, Cu, Zn, Pb, Ni, Mo, U, PGM and industrial minerals.
   - A senior position with an international consulting firm.

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 most recently visited the Roça Grande Mine on December 14, 2017 and the Pilar Mine on December 13, 2017. I had previously visited the Roça Grande Mine on November 22, 2014 and the Pilar Mine on November 21, 2014.

6. I am responsible for Sections 4 to 12 and Section 14 and share responsibility with my co-author for Sections 1, 2, 3, 25, 26, and 27 of the Technical Report.

7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.

8. I have previously prepared public domain Mineral Resource estimates and Technical Reports for the properties that are the subject of the Technical Report.

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

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

Dated this 17th day of April, 2018

(Signed and Sealed) ***"Reno Pressacco"***

Reno Pressacco, M.Sc.(A)., P.Geo.

JEFF SEPP

I, Jeff Sepp, P.Eng., as an author of this report entitled "Technical Report on the Roça Grande and Pilar Mines, Minas Gerais State, Brazil" prepared for Jaguar Mining Inc., and dated April 17, 2018, do hereby certify that:

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

2. I am a graduate of the Laurentian University, Sudbury, Ontario, Canada, in 1997 with a Bachelor of Engineering degree in Mining Engineering.

3. I am registered as a Professional Engineer in the Province of Ontario (Reg. #100139899). I have worked as a Mining Engineer for a total of 21 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Review and report as a consultant on many mining operations and projects around the world for due diligence and regulatory requirements
   - Feasibility Study project work on many mining projects, including South American projects.
   - Operational experience as Planning Engineer and Senior Mine Engineer with three North American mining companies
   - Work as a mining engineer consultant on various projects around the world

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 Roça Grande Mine on December 14, 2017 and the Pilar Mine on December 13, 2017.

6. I am responsible for Sections 13, 15 to 24 and share responsibility with my co-author for Sections 1, 2, 3, 25, 26, and 27 of the Technical Report.

7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.

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

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

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

Dated this 17th day of April, 2018

(Signed and Sealed) ***"Jeff Sepp"***

Jeff Sepp, P.Eng.

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CONSENT OF QUALIFIED PERSON

April 17, 2018

I, Reno Pressacco, P.Geo., do hereby consent to the public filing of the report titled "Technical Report on the Roça Grande and Pilar Mines, Minas Gerais State, Brazil" (the Technical Report), prepared for Jaguar Mining Inc. and dated April 17, 2018, and to the use of extracts from, or the summary of, the Technical Report in the press release of Jaguar Mining Inc. dated March 2, 2018 (the Press Release).

I also certify that I have read the Press Release and that it fairly and accurately represents the information in the Technical Report that supports the Press Release.

(Signed) "*Reno Pressacco*"

Reno Pressacco, P.Geo.
Principal Geologist

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CONSENT OF QUALIFIED PERSON

April 17, 2018

I, Jeff Sepp, P.Eng., do hereby consent to the public filing of the report titled "Technical Report on the Roça Grande and Pilar Mines, Minas Gerais State, Brazil" (the Technical Report), prepared for Jaguar Mining Inc. and dated April 17, 2018, and to the use of extracts from, or the summary of, the Technical Report in the press release of Jaguar Mining Inc. dated March 2, 2018 (the Press Release).

I also certify that I have read the Press Release and that it fairly and accurately represents the information in the Technical Report that supports the Press Release.

(Signed) "*Jeff Sepp*"

Jeff Sepp, P.Eng.
Senior Mining Engineer