National Instrument 43-101

Technical Report on the

Lourdes Gold Project

Department of Ayacucho, Peru

For:
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And

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1.0 SUMMARY

1.1 Introduction

The Lourdes Gold Project is an early-phase, epithermal, precious-metal mineral exploration project with identified drill targets.

The authors of this report were contracted by Pucara Resources Corp. ("Pucara") and Magnitude Mining Ltd. ("Magnitude") to review results of exploration work completed by Pucara on the Lourdes Project ("Property") and to compile an independent technical report in compliance with disclosure and reporting requirements set forth in National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101), Companion Policy 43-101 CP to NI 43-101, and Form 43-101F1 of NI 43-101, dated June 2011.

The Property is located in the Department of Ayacucho, Peru, approximately 400 kilometers southeast of Lima (Figure 1). The Property is easily accessible by a paved, single lane road originating in the town of Puquio, 155 km east of the Pan American Highway.

Pucara is titleholder to ten (10) mining concessions issued by the Government of Peru covering a contiguous area of 2,576 Has. In 2019, Pucara submitted a petition for an additional mining concession that will bring the total area of the Property to 3,176 Has.

Figure 1. Lourdes Project location.

The authors of this report are Steven L. Park and Dr. Owen Miller, both independent consulting geologists with more than 25 years of mineral exploration experience in various geological environments throughout the Americas. Each author is a Qualified Person as defined by NI 43-101 through his qualifications, experience and professional registration.

Mr. Park visited the Property on July 14 – 15, 2017 and Dr. Miller visited on July 2 – 3, 2020.

1.2 Property Ownership

Titleholder to the Property's mining concessions is Pucara Resources S.A.C., "Pucara", the wholly owned Peruvian subsidiary of Pucara Resources Corp. Pucara maintains 100% ownership of the mining concessions that comprise the Property.

Nine mining concessions ('EPZ Ichupuca' series) were staked by Esperanza Silver Peru SAC (EPZ) in 2010 following geological reconnaissance through the region. Pucara purchased these concessions from EPZ in 2013 for shares in Pucara wherein EPZ retained a 1% Net Smelter Return (NSR) royalty over those nine concessions. The 'Ichupuca Once' concession was staked by Pucara, and title was received in 2013. The "Ichupuca 10" concession was staked in October 2019 and the title is in process of being granted by INGEMMET.

Net Smelter Return (NSR) royalties on the Lourdes concessions are:

- 1% to Metalla Royalty & Streaming Ltd, acquired from EPZ
- 1% to Sandstorm Gold Ltd
- 0.5% to Lunde International Corp

1.3 Geology

The Property is underlain by a thick sequence of Tertiary age volcanic rocks that host high- and low-sulfidation epithermal precious metal deposits in the region.

These volcanic units disconformably overlie upper Mesozoic continental shelf clastic and carbonate sedimentary rocks and intrusive rocks of the Coastal Batholith. The nearest exposures of these rocks are represented by quartzose and calcareous sandstones of the Yura Group and by intrusive rocks of granodiorite to tonalite composition on the western flank of the Cordillera Occidental.

The volcanic stratigraphy on the Property consists of volcanic rocks of the Tacaza Group (early Oligocene) and Barroso Volcanics (late Miocene to Pleistocene). The Tacaza Group is divided into two units: a basal volcaniclastic unit characterized by medium to coarse grained tuffaceous sandstone intercalated with thin strata of siltstone and agglomerates with pebble- to cobble- sized heterolithic clasts; and an upper volcanic unit consisting of andesite lavas, andesite agglomerate flows and rhyolitic ash-flow tuffs. In the area of the Property, flows from the Corihuiri volcanic center represent the Barroso volcanics comprised of unaltered vesicular basaltic andesite lava.

The Property lies along a northwesterly structural trend that hosts the Apumayo, Lucanas, Vicuñita and El Rubi gold mines. The Apumayo Mine, located 15 km south of the Property, has produced at a rate of 15,000 tpd from resources listed as 21.5 Mt @ 0.39 g/t Au for 270,000 contained ounces Au

(INGEMMET, 2012) in a high-sulfidation, disseminated type gold deposit hosted in Tacaza Group volcanic rocks.

Pucara's geological mapping program on the Property has identified several prominent diatreme and volcanic vent structures that have played a significant role in the history of the alteration and mineralization found on the Property. These diatremes cut through the local volcanic stratigraphy and are infilled with breccias that are comprised of clasts derived from the volcanic wall rock that include pre-existing strong silicic alteration. Vertical zonation within the breccia structures can be interpreted from crude sorting and stratification of breccia fill that typically is found in the upper portion of diatremes.

The Lourdes Property contains large areas of pervasive and intense high-sulfidation epithermal alteration. Diatreme and vent breccias are strongly altered to granular silica with local massive and vuggy silica alteration types at lower elevations as well as within structural zones. Most vent/diatreme structures show evidence of multiple breccia and alteration events. Alteration assemblages are classic high-sulfidation types with zonation from silicic to advanced argillic to argillic and propylitic and are associated with the vent/diatremes and structural zones. Alteration is also controlled by the permeability of the host volcanic units and by structural zones having two principal orientations, north-northwest (335 degrees) and northeast (055 degrees). The northeast orientation is exemplified by the Chucllani and Ayani zones that host significant geochemical gold anomalies and cross the eastern portion of the Lourdes Property.

Strongly altered areas of advanced argillic alteration are characterized by the complete replacement of the original volcanic rock matrix and phenocrysts by quartz-alunite and pyrophyllite-quartz. Topographically lower portions of the broad high-sulfidation alteration zones are locally stratabound, with gently dipping zones of massive to vuggy silica alteration up to 50m thick. Stratabound silicification is locally cross-cut by younger, possibly reactivated, steeply dipping phreatic breccia structures. Stockwork porphyry-style veining enriched with Au-Cu-Mo is locally present.

1.4 Exploration Activity and Results

Pucara has completed surface sampling and geochemical analyses programs of both rock chip and soil samples across the entire Property, geophysical surveys using induced polarization (IP) and ground magnetics, and reflectance spectroscopy of rock samples (PIMA) from outcrop and from satellite imagery (SWIR, VNIR). The Property's lithology, alteration and structures have been mapped on a detailed scale.

The surface sampling program culminated in the collection of 3,089 rock chip samples, 57 stream sediment samples and 713 soil samples. Interpretation of the geochemical results defined strong Au, Cu and Mo anomalies associated with intense silicic alteration in diatremes and vertical hydrothermal breccia structures. Gold in rock chip samples from these structural settings returned values up to 1.70 g/t Au.

Molybdenum anomalies are wide-spread across the central Lourdes project area, especially in the Central Diatreme where a sample line along an east-west trending drainage returned consistent values greater than 300 ppm Mo over a length of 600m.

The geophysical survey was completed on the property by Arce Geofisicos (Arce, 2012) on behalf of EPZ in April 2012. Induced polarization (IP) and spontaneous potential (SP) surveys were extended along 56 line-km; a ground magnetic survey covered 70 line-km. The IP survey covered 50.45 line-km and was configured as a pole-pole array.

The magnetic survey results were presented in a map set (1:5,000 scale) including total field, reduced-to-pole magnetic intensity and total field, analytical signal of the vertical integration (ASVI). The map set also includes a series of magnetic susceptibility maps interpreted at eight depth levels from 20m to 400m below the surface. Significant geophysical anomalies are described in their respective exploration target zones below.

Analysis by reflectance spectroscopy curves (PIMA) of samples from rock outcrops across the project area show both high- and moderate-temperature suites of advanced argillic alteration. Zonation of alteration is evident across the Jellopata Diatreme where the diatreme center shows predominantly silica and quartz-pyrophyllite (high-temperature assemblage) grading outward into quartz-(Na) alunite and quartz-(K) alunite (low-temperature assemblages). The same pattern of zonation occurs in the North Zone, although with relatively less pyrophyllite. The highest Au anomalies in the North Zone coincide with the higher temperature alteration suite at the northern end of the outcrop.

Short-wave infrared (SWIR) and very near-infrared (VNIR) satellite imagery corroborated results from the ground spectroscopy sample grids and highlighted a continuous band of pyrophyllite enveloped by silica trending WNW through the Jellopata Diatreme coincident with Cu geochemical anomalies. The SWIR image of FeOx–clays (hematite + jarosite) shows a very large response from hematite associated with the Jellopata Diatreme and coincident with the western sectors of the chargeability and resistivity geophysical anomalies. Structural grain through the hematite image is also WNW. Zones of jarosite are shown peripheral to the main hematite feature.

1.5 Exploration Targets

Field work completed to date on the Lourdes Project has identified four areas on the Property that stand out as primary exploration targets (Figure 5):

1) Jellopata-Central diatremes and proximal Cu-Mo geochemical anomalies.

2) Chucllani structural trend hosting strong Au-Cu-Mo geochemical anomalies through the Cascada Diatreme, Chucllani Vent, and Chucllani structural zone.

3) Paccha Huayco-Ayani diatreme/vent complex, and

4) North Vent breccia complex.

The Jellopata-Central target is the largest identified in the Lourdes hydrothermal system and is believed to have the highest potential to host a significant gold deposit. The target consists of a 1,200m long, 300m wide north-south trending zone of high resistivity that is interpreted to be silicic alteration within a large structurally-controlled diatreme. The Jellopata zone is parallel to and within the

Apumayo mineralized trend which is interpreted to be a regional structure controlling mineralization in the district. The Jellopata target is at the highest elevation in the Lourdes system (4,350m) where the surface expression consists of granular silica breccias and advanced argillic alteration characteristic of upper levels of high-sulfidation gold deposits.

Possible mineralization styles at the Jellopata-Central target include:

1) Disseminated Au mineralization within diatreme breccias and in adjacent permeable host rocks;

2) Au-Cu-Mo stockwork mineralization similar to the outcrop along the eastern margin of the target zone found hosting molybdenum grades of more than 1.0% Mo;

3) disseminated Au mineralization hosted in a permeable dacite tuff unit; and

4) Cu-Au stockwork mineralization in the cupola of a felsic porphyry intrusive body.

The Chucllani structural trend consists of four separate target areas over approximately 800m of strike length along a broad area of intense alteration through the Cascada Diatreme and Chucllani vent complex where gold, copper and molybdenum geochemical anomalies align along the NE-trending structure. Location of the strongest points of these anomalies appears to be controlled by the intersection of NW-trending fold axes with the Chucllani structural trend or by diatreme structures localized by the same structural intersections. The primary drill target is an area measuring greater than 200m x 75m on a northeast-trending zone of granular silica alteration with outcropping gold mineralization up to 0.64 g/t Au. A secondary target 200m to the northeast along the same trend features gold-bearing granular silica (up to 1.7 g/t Au) outcropping within and marginal to a prominent ravine.

The Paccha Huayco-Ayani target is in the central part of the Lourdes system and is the second largest in the project area. It occurs at the three-way intersection of the dominant structural trends on the property: the north-south Apumayo trend, the northwest fold axis trend, and the northeast Chucllani structural trend. Surface rocks in the target area show strong advanced argillic alteration with granular and massive silica at structural intersections. The target is underlain by a large resistivity anomaly measuring 1,000m by 500m and elongated parallel to the Chucllani structural zone interpreted to be a diatreme similar to the Jellopata target. The resistivity anomaly occurs below pervasive advanced argillic alteration with granular and massive silica at structural intersections coincident with Cu-Mo-(Au) surface geochemical anomalies.

The Ayani target is a structural zone of silicified breccias measuring approximately 700m x 150m with proximal stratiform silicic alteration, a vent breccia with chalcedonic silica in the upper portions, and gold-bearing granular silica breccia. Gold-bearing granular silica (up to 0.87 g/t Au) is exposed at the edge of colluvial cover in the lower portions of the zone, suggesting that the colluvium may be concealing additional non-resistant, mineralized granular silica.

The silicified, multi-stage, gold-bearing North Vent breccia complex is associated with Mo, Sb, and Hg surface geochemical anomalies and surrounded by a well-defined halo of anomalous Zn values in soil geochemistry. Resistivity sections indicate the form of a breccia pipe in section with a width of approximately 200 meters and length to 700 meters in accordance with the size of the mapped outcrop.

Localized porphyry-style mineralization in the Central Zone is indicated by stockwork veinlets of molybdenite (greater than 1% Mo) and magnetite-pyrite-chalcanthite exposed in a small outcrop within predominantly quartz-pyrophyllite alteration. Local dense stockworks of thin magnetite veinlets are present. Magnetite stockwork veinlets grade vertically into hydrothermal breccias with highly angular clasts in a magnetite matrix. The stockwork veinlets show cross-cutting relationships indicative of multi-stage mineralization.

1.6 Recommended Exploration Program

Field work completed on the Lourdes Property has defined drill targets that should be pursued as the next step in the Property's exploration program. A two-phase drill program is recommended to test drill targets in the areas listed above.

A first phase of drilling on these targets is recommended for a total of 5,450 meters of reverse circulation (RC) drilling with holes programmed to test the most prospective areas as defined by geochemical and geophysical anomalies. Priority in distributing drilling meters should be given to the Central Zone (Jellopata-Central diatremes), the Northeast Zone (Chucllani structural zone and the Paccha Huayco-Ayani area), followed by the North Zone (North Vent breccia complex). RC drilling is recommended since it is more reliable in highly altered zones, less costly, and faster than diamond core drilling (DDH).

Drill holes should target the three gold anomalies along Chucllani structural zone and fill in with later drilling along this structure where warranted. Drilling in the North Zone should be directed at testing the breccia complex and surrounding volcanic stratigraphy, using geophysical anomalies to orient the drilling.

All of the forty (40) drill platforms allowable under a DIA (*Declaracion de Impacto Ambiental*) exploration permit should be constructed in the first round of drilling to allow flexibility to adjust target priorities during the course of the drill program.

Cost of the exploration program is estimated at CAD$ 2,942,649 over a period of 9 months (Tables 1 and 2). Reverse circulation drilling is programmed for a total of 5,450 meters in Phase 1 and damond drilling (DDH) program will follow in Phase 2 with 2,200 meters of drilling with the objective of pursuing mineralized targets identified in Phase 1.

Table 1. Phase 1 Exploration Program Budget

Item	Amount	Units	CAD$	
			Unit Cost	Total
Wages – field, technical personnel	6.5	months	32,008	208,052
Community relations	6.5	months	5,756	37,414
Permitting (environmental, archeology, water)	1		76,925	76,925
Drill road accesses & construction	500	hours	228	114,000
Drill rig mobilization, remediation	2	months	54,171	108,342
RC drilling - 1 twelve hour shift	5,450	meters	214	1,166,300
Drill sample assays + 10% QA/QC	2,998	samples	23	68,954
Drill camp logistics and personnel	6.5	months	21,760	141,440
Consultant	3	months	13,628	40,884
Sub - Total Phase 1				**1,962,311**
Contingencies	5%			98,116
Total Phase 1				**CAD 2,060,427**

Table 2. Phase 2 Exploration Program Budget

Item	Amount	Units	CAD$	
			Unit Cost	Total
Wages – field, technical personnel	3	months	24,803	74,409
Community relations	3	months	3,271	9,813
Permitting (environmental, archaeology, water)	1		40,884	40,884
Drill road accesses & construction	200	hours	204	40,800
DDH mobilization, remediation	3	months	22,486	67,458
DDH drilling	2,200	meters	204	448,800
Drill core prep, logging, assays + 10% QA/QC	1,210	samples	27	32,670
Drill camp logistics and personnel	3	months	32,707	98,121
Consultant	2	months	13,628	27,256
Sub - Total Phase 2				**840,211**
Contingencies	5%			42,011
Total Phase 2				**CAD 882,222**

Phase 1 + Phase 2 CAD 2,942,649

1.7 Conclusions

1. Exploration results on the Property to date have defined exploration targets that warrant drill testing related to a high-sulfidation, gold-bearing, epithermal system possibly associated with an underlying copper-molybdenum-gold porphyry system.

2. The Property has been and is being evaluated in a professional manner consistent with industry standards and best practices.

3. The Pucara Project is a Property of Merit that justifies the continuation of exploration programs designed to test the deposit models outlined in this report.

2.0 INTRODUCTION

2.1 Issuers of the Technical Report

The issuers of this report are Pucara Resources Corp ("Pucara") and Magnitude Mining Ltd. ("Magnitude"). Magnitude, a Capital Pool Company, has agreed to acquire Pucara pursuant to a plan of arrangement which, when completed, will constitute Magnitude's qualifying transaction pursuant to the policies of the TSX Venture Exchange. The authors of this report were contracted by Pucara to review results of exploration work completed on the Lourdes Gold Project ("Property") and to compile an independent technical report on the property in compliance with disclosure and reporting requirements set forth in National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101), Companion Policy 43-101 CP to NI 43-101, and Form 43-101F1 of NI 43-101, dated June 2011.

2.2 Lourdes Gold Project – "Property"

The Property is located in the Provinces of Lucanas and Parinacochas, Department of Ayacucho, Peru, approximately 420km southeast of Lima. Eleven concessions form the Property covering a total of 3,176 hectares.

The Property is 100% owned and controlled by Pucara. Pucara has conducted exploration work on the Property since 2013. Esperanza Silver SAC (EPZ) was operator prior to 2013.

The Property is not considered an "advanced property" as defined by the Canadian Securities Administrators (CSA) – NI 43-101 Standards for Disclosure of Mineral Projects; as such, Items 15 – 22 of the standard Form 43-101F1 Technical Report are not included herein.

2.3 Authors of the Report

The authors of this report are Steven L. Park and Dr. Owen Miller. Mr. Park is an independent consulting geologist with more than 30 years of mineral exploration experience in various geological environments throughout the Americas including 20 years in Peru. Mr. Park has ample experience exploring for and evaluating high-sulfidation, epithermal, volcanic-hosted, precious-metal deposits in and related porphyry Cu deposits in the Central Andes of Peru including Pierina Au-Ag and Cerro Corona Cu (American Barrick Gold, 1994-1997), Virgin de Fatima/San Simon Mine (Gitennes Resources, 1998), Michiquillay Cu (ProInversion, Milpo, 2015-2016) and numerous other exploration project evaluations throughout Peru. Mr. Park is currently chief geologist/senior consultant for Chakana Copper Corp. on their Soledad Project (Au-Cu-Ag in tourmaline breccias) in the Department of Ancash near the Pierina Mine. Mr. Park is a Qualified Person as defined by Canadian Securities Administrators, National Instrument 43-101, Standards of Disclosure for Mineral Projects by virtue of his qualifications, experience and professional registration as Certified Professional Geologist with the American Institute of Professional Geologists. He has authored numerous NI 43-101-compliant technical reports on mineral exploration projects in Peru since 2003.

Dr. Miller has 27 years of minerals exploration experience in South America. From 1994 to 1998 he consulted for several major mining companies in Chile and Argentina (Newcrest, Homestake, BHP, Barrick, MIM) regional exploration programs on epithermal precious-metal, IOCG, and porphyry copper deposits. After 1998 he continued minerals exploration consulting based in Lima, Peru, for junior and major companies throughout Latin America, evaluating projects ranging from grass-roots stage through resource definition, focusing on epithermal precious- and base-metals, porphyry copper, skarn, sediment-hosted and IOCG deposits.

In 2005 Dr. Miller became a Qualified Person under NI 43-101 and has authored or co-authored numerous technical reports on projects in Latin America. In 2012, he led the team responsible for the Callanquitas discovery at the Igor Project operated by Sienna Minerals in northern Peru (inferred resources: 730,000 oz AuEq contained at 3.2 g/t AuEq).

This report is based on documentation supplied to the authors by Pucara geologists for work done on the Property through 2019 including geological and geochemical reports, laboratory certificates, database files, and numerous maps presented in various formats. The authors expresses their confidence in the Pucara information since there are no extraordinary results or claims made therein.

2.4 Authors' Site Visits

The authors have made two site visits to the Property beginning in 2017. Mr. Park visited the Property on July 14-15, 2017 accompanied by Pucara technical personnel and spent those two days in the Central and North zones of the Property where Pucara had been focusing their sampling and mapping efforts. Mr. Park reviewed outcrops of interest in these zones to verify the geological model that Pucara was pursuing and collected several rock chip samples as checks against the surface sampling that had been completed by Pucara at that time.

Exploration work conducted by Pucara subsequent to Mr. Park's visit was supervised by Ken Balleweg (P.Geo., C.P.G.), Vice President of Exploration, Pucara. The authors have reviewed Mr. Balleweg's internal reports to Pucara and concur with much of Mr. Balleweg's geological observations and concept of the model of mineralization most applicable to the Property. Sections of Mr. Balleweg's reports describing diatremes, volcanic vents, alteration and breccia textures are quoted at length herein and appropriately cited.

In October 2019, Mr. Park conducted a desktop review of Pucara's exploration program with Mr. Balleweg in Pucara's Lima office including a review of all surface geochemical sampling and geological mapping programs completed since initiation of exploration by EPZ in 2010 and Pucara's continuation of exploration since 2013.

Dr. Miller conducted the latest field visit to the Property in from July 2 – 3, 2020 on conclusion of Pucara's surface geochemical sampling program ending in late 2019. (This visit was delayed due to travel restrictions enforced during the Covid-19 pandemic.) Dr. Miller visited the Chucllani, Cascada and Ayani exploration targets and collected rock chip channel samples as verification of Pucara's sampling work in those zones.

After making the field visits and data reviews of Pucara's exploration program, the authors are satisfied that, under the supervision of Mr. Balleweg, methods employed while conducting surface geochemical sampling and mineral assays were consistent with said methods employed throughout the duration of the exploration program.

2.5 Abbreviations and Formats

Abbreviations and formats used in the report are listed below. All measurements in this report are in metric units. All monetary amounts are stated as Canadian dollars (CAD$).

cm = centimeter
g = grams
g/t = grams per tonne = ppm
Has. = hectares
km = kilometer
Ma = million years
m.a.s.l. = meters above sea level
mm = millimeter
Mt = million metric tonnes
m = meter
oz = troy ounce = 31.103 grams
oz/t = troy ounce per short ton
ppb = parts per billion
ppm = parts per million = grams per tonne
PSAD 56 = Prov. South American Datum 1956
µm = micrometer
UTM = Universal Transverse Mercator

Chemical element symbols:

Ag = silver
As = arsenic
Au = gold
Ba = barium
Cu = copper
Hg = mercury
Mo = molybdenum
Pb = lead
Sb = antimony
Zn = zinc

All maps are presented in UTM map datum base PSAD 56, Zone 18L.

Terms in Spanish other than proper nouns are printed in italics.

3.0 RELIANCE ON OTHER EXPERTS

The authors have not relied on any unqualified persons for information on legal, environmental, political issues or other factors relevant to this technical report.

Description of the legal status of mining concessions that comprise the Property as described in this report is taken from a legal opinion written by Dentons Gallo Barrio Pickmann, the Lima office of the international law firm, Dentons, at the request of Pucara (Calmet and Chirinos, 2020). Dentons Gallo Barrio Pickmann state that their legal opinion is based solely on information: 1) delivered to them by Pucara, 2) contained in the Peruvian Public Registry, 3) available to the public from the Institute of Geology, Mining, and Metallurgy (INGEMMET), and 4) obtained from the website of the Ministry of Energy and Mines (*Ministerio de Energía y Minas de Perú*, *MinEM*).

The authors express no legal opinion regarding the property title or ownership status of the Property other than to report results of his own review of publicly available information on the INGEMMET website and to rely on the legal opinion provided by Dentons Gallo Barrio Pickmann.

4.0 PROPERTY DESCRIPTION AND LOCATION

4.1 Location

The Property is located approximately 420 km southeast of Lima on a direct line and 632 km by road. Nasca is the nearest major urban center, located on the Pan American Highway 205 km by road west of the Property. The Property falls within the Department of Ayacucho in two provinces: District of Cora Cora, Province of Parinacochas, and the Districts of Chaviña and Puquio, Province of Lucanas. The Property is covered by the Chaviña (30-o) quadrangle of the INGEMMET 1:100,000 scale geological and topographical map series.

UTM coordinates for the central point on the Property are: 617,500mE; 8,364,000mN (PSAD 56, Zone 18L); and by geographical coordinates: 14º 47' 51.9" S; 73 º 54' 32.0" W.

4.2 Mining Concessions

The Property is comprised of ten mining concessions and one petition for mining concession that form a contiguous block covering an effective area of 3,176 hectares (Figure 2). Table 3 lists registration data for each mining concession.

Table 3. Lourdes Project mining concessions.

Concession Name	File Code	Titleholder	Status	Effective Area (hectares)
EPZ Ichupuca Uno	010294810	Pucara Resources S.A.C.	Titled concession	349.4
EPZ Ichupuca Dos	010294910	Pucara Resources S.A.C.	Titled concession	64.3
EPZ Ichupuca Tres	010295010	Pucara Resources S.A.C.	Titled concession	279.5
EPZ Ichupuca Cuatro	010295110	Pucara Resources S.A.C.	Titled concession	118.9
EPZ Ichupuca Cinco	010295210	Pucara Resources S.A.C.	Titled concession	181.7
EPZ Ichupuca Seis	010295310	Pucara Resources S.A.C.	Titled concession	178.7
EPZ Ichupuca Siete	010295410	Pucara Resources S.A.C.	Titled concession	119.8
EPZ Ichupuca Ocho	010295510	Pucara Resources S.A.C.	Titled concession	990.8
EPZ Ichupuca Nueve	010545011	Pucara Resources S.A.C.	Titled concession	285.8
Ichupuca Once	010214713	Pucara Resources S.A.C.	Titled concession	7.2
Ichupuca 10*	010285819	Pucara Resources S.A.C.	Petition for concession	600.0
TOTAL AREA				**3,176**

*Petition for mining concession submitted to INGEMMET on October 7, 2019; effective area may be less than 600 hectares as titled concession.

4.3 Property Ownership

Titleholder to the Property's mining concessions is Pucara Resources S.A.C., the wholly owned Peruvian subsidiary of Pucara Resources Corp. Pucara maintains 100% ownership of the mining concessions that comprise the Property. A legal review of titles to these concessions conducted by Dentons Gallo Barrios Pickmann of Lima, Peru, dated June 30, 2020 found that all concessions comprising the Property are in good standing (Calmet and Chirinos, 2020).

Nine mining concessions ('EPZ Ichupuca' series) were staked by Esperanza Silver Peru SAC (EPZ) in 2010 following geological reconnaissance through the region. Pucara purchased these concessions from EPZ in 2013. The 'Ichupuca Once' concession was staked by Pucara, and title was received in 2013. The "Ichupuca 10" concession was staked in October 2019 and the title is in process of being granted by INGEMMET.

4.3.1 NSR Royalty Agreements

Under the terms of the transaction in which Pucara purchased Property concessions from Esperanza Silver Peru S.A.C. (EPZ), the nine concessions in the series 'EPZ Ichupuca' are subject to a Net Smelter Returns (NSR) royalty agreement granting EPZ a 1% NSR royalty payable on all mineral products extracted from any of these nine mining concessions. In December 2019, Metalla Royalty & Streaming acquired this royalty from EPZ.

On October 19, 2017, Pucara entered into a NSR royalty agreement granting Sandstorm Gold Ltd. a 1.0% NSR royalty payable on all mineral products extracted from any of the ten titled mining concessions listed in Table 3.

On May 25, 2020, Pucara entered into an NSR royalty agreement granting Lunde International Corp. a 0.5 % NSR royalty payable on all mineral products extracted from any of the eleven mining concessions listed in Table 3.

4.3.2 Annual Concession Fees

Pucara is required to pay US$ 3.00 per hectare per year for these concessions, a total of US$9,528, due on or before June 30 of each year, as the standard rate established by *MinEM*. This is the only payment obligation imposed by Peruvian Mining Law to maintain concessions in good standing for the first 10 years after concession title is awarded. Pucara has paid concession fees through the year 2019. Payment for the year 2020 is payable September 30, 2020, extended from June 2020 due to Covid-19.

Titleholders are allowed to defer one year of concession fee and penalty payments, but once two years have passed without payment, the concessions are declared invalid and the ground is declared open for claiming by any entity other than the previous titleholder.

Mining concessions that have been in existence longer than 10 years are subject to penalties if the titleholder has not declared a certain amount of mineral production or exploration work that can be credited to the 11th year of existence of the concession. Eight of the ten concessions held by Pucara on the Property were formed in 2010 and will be subject to annual concession payment penalties in June 2022 when concession payments for the year 2021 are due. Penalties per hectare are currently set at 2% of a Tributary Tax Unit (UIT). In 2018 the UIT was fixed at S/4,150 or US$1,275 so that the concession penalty is roughly US$25.00 per hectare subject to variation in exchange rates. The Peruvian government has increased the UIT 1.8% per year on average since 2008.

The two concessions ‘EPZ Ichupuca Nueva’ and ‘Ichupuca Once’, formed in 2011 and 2013, respectively, will be subject to these penalties in years 2022 and 2024 if production or exploration requirements are not met by those dates.

4.4 Surface Rights and Exploration Permits

The communities of Para and Pallccarana and four private landowners control the Property’s surface area (Figure 3). Two separate access agreements with the communities were signed in December 2017 and February 2018 for terms of three (3) years each. Four separate access agreements with the private landowners were signed in December 2017 and January 2018, also for terms of three (3) years each. These access agreements allow Pucara to conduct surface exploration activities across the Property.

In July 2019 Pucara received a drilling permit from the *MinEM* after approval of Pucara’s Declaration of Environmental Impact (*Declaracion de Impacto Ambiental*, *DIA*). The DIA covers 980.6 hectares of the project's concession block and allows Pucara to drill from 40 platforms distributed among the various exploration targets identified to date within that area.

The next step required in the permitting process is to obtain the authorization for *Inicio de Actividades* (“Start of Activities”), submitted to *MinEM* in July 2019. Included in this step is the *Consulta Previa* (“Social Consultation”) to mark the local community’s support of the upcoming drill program as well as future exploration activities. Pucara has prioritized efforts to achieve excellent relations with the Para and Pallccarana communities.

4.5 Environmental Liabilities

To the best of the authors’ knowledge, the Property is not subject to any environmental liabilities since no evidence of mining or exploration activity has been observed on the Property.

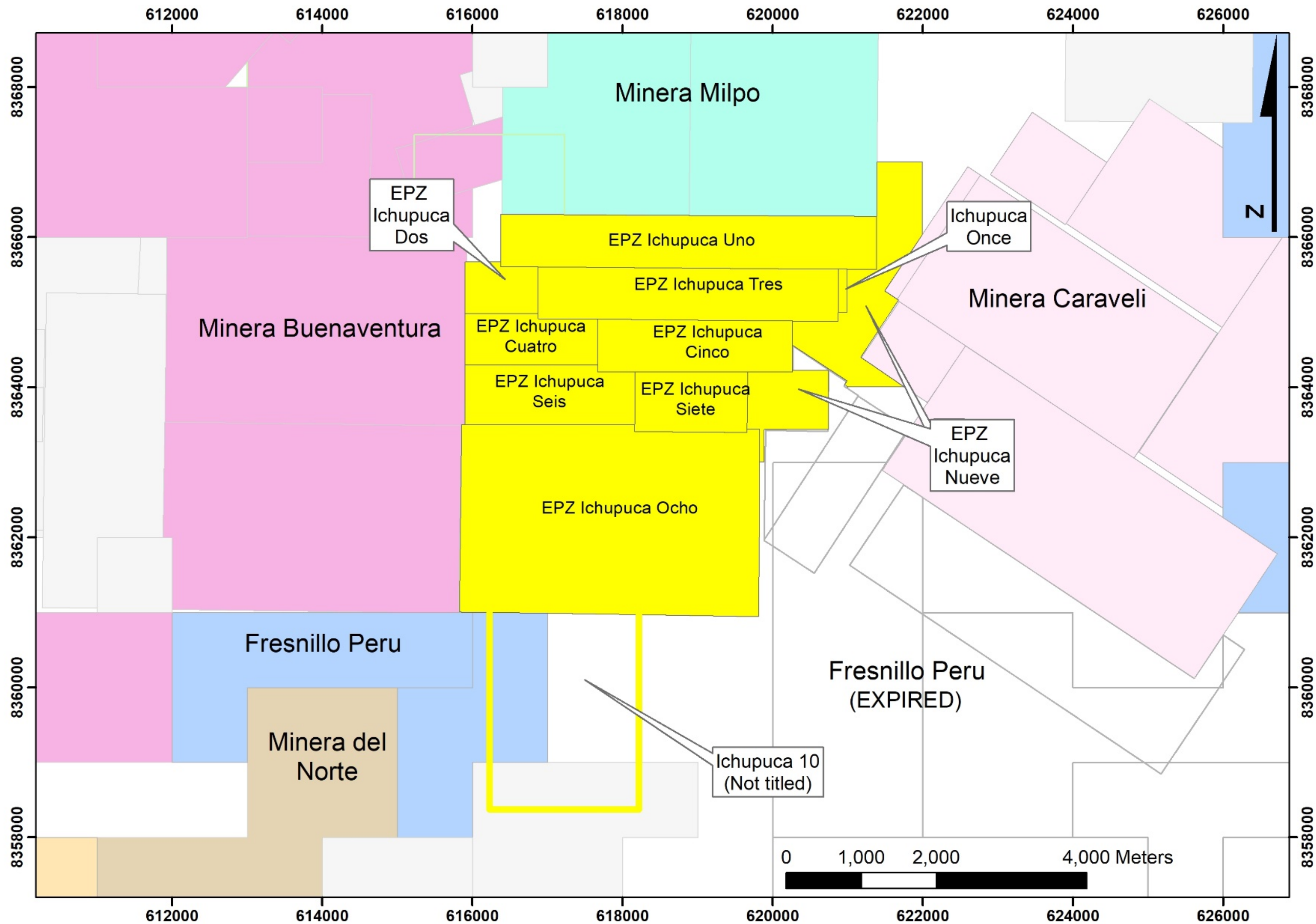

Figure 2. Pucara Resources S.A.C. mining concessions, Lourdes Project, through January 2020. (INGEMMET website, *http://ingemmet.gob.pe/geocatmin*).

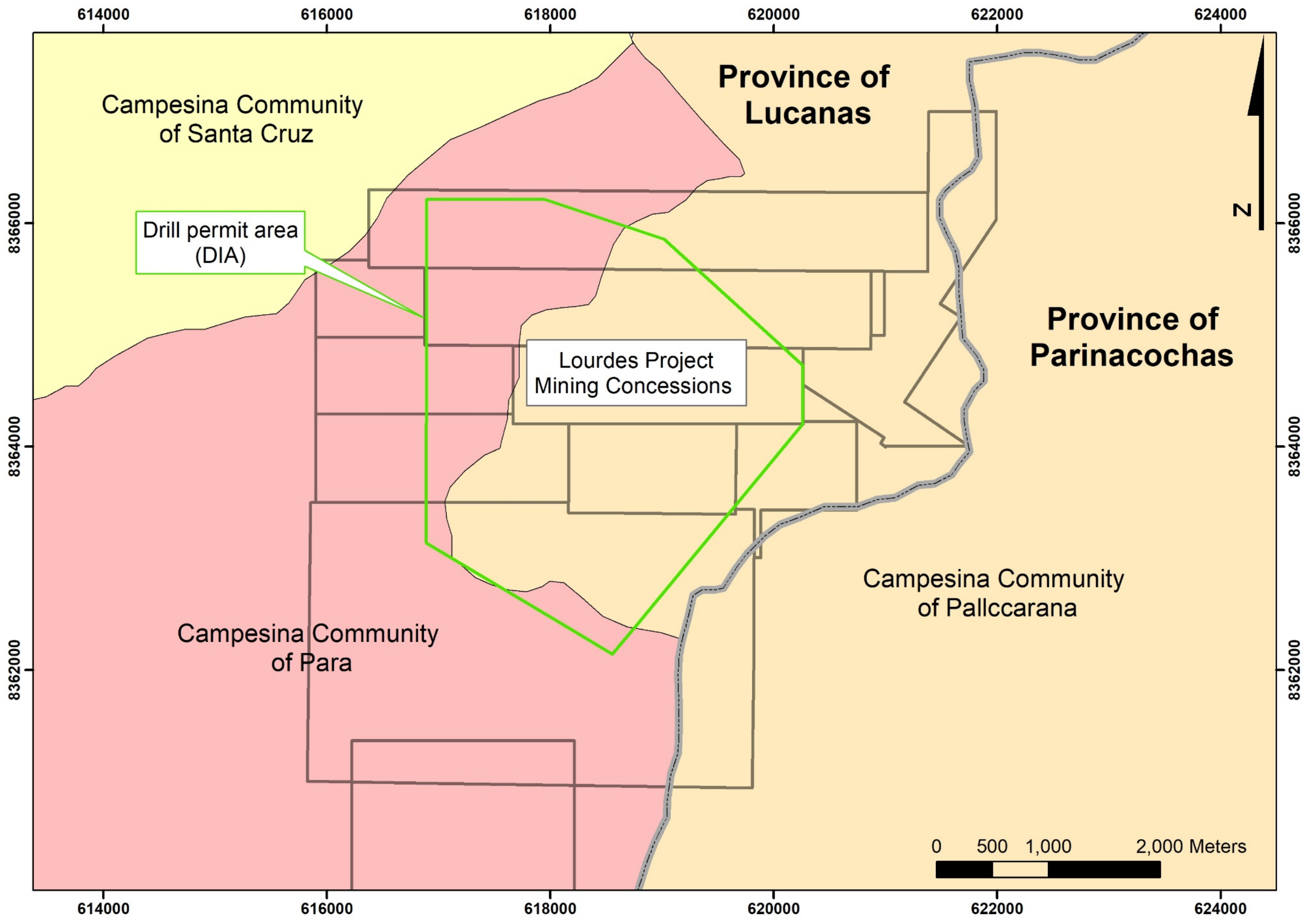

Figure 3. Community boundaries, Lourdes Project. (Pucara Resources S.A.C., January 2020).

5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPY

5.1 Property Access

The Property is easily accessible by a paved, single lane road originating in the town of Puquio 155 km east of Nasca. Table 4 gives distance and approximate travel time to the Property from Lima.

The city of Puquio (population 13,800) is the nearest urban center to the Property offering basic accommodations and services. Nasca is the largest urban center in the region, a tourist destination with a population of 55,000 inhabitants and also the local mining center for the hundreds of small mining operations within a 100 km radius. Numerous custom mineral processing plants in Nasca receive ore from small miners in the region. Nasca has all of the resources of a mid-sized city including an airport, although the airport is principally used for tourist flights in small aircraft over the nearby Nasca Lines.

Table 4. Access to Lourdes Project from Lima

Route	Road surface	Distance (Km)	Time (hrs)
Lima – Nasca	Pan American Highway	420	6.0
Nasca – Puquio	Two-lane paved highway	155	3.5
Puquio – Capilla	Single-lane paved road	50	1.5
Capilla – Lourdes	Cross-country track	7	1.0
TOTAL		**632**	**7.3**

5.2 Climate and Physiography

The Property lies in a plateau of the *Cordillera Occidental* in a region of moderate topographical relief where elevations range from 3,800 to 4,300 m.a.s.l.

The climate is sunny, dry and cool during the months of April to December, coldest during June through August when nighttime temperatures can dip to below freezing. The months of January to March are considered the rainy season when unmaintained roads and trails can become nearly impassable due to muddy and foggy conditions. Flash flooding during the rainy season may impede access along coastal highways and roads that climb to high elevations on the flank of the Cordillera Occidental.

Vegetation is sparse consisting of *Ichu* grass that grows in disperse clumps affording ample exposure of rock outcrop and rock float material on surface.

5.3 Local Resources

Local manual labor is available from both communities of Para and Pallccarana. Puquio is the nearest commercial center; it is well stocked with supplies needed to support a small mining camp. Heavy machinery such as drilling equipment are available in Arequipa or Lima and may arrive on the property in two days by road transport.

Water for an exploration camp and drill program is available from Rio Pallccarana which runs through the eastern sector of the Property or Rio Yana Mayo in the northwest sector. Flow rates during the dry season are estimated to be 2 to 5m^3/second. Higher flow rates that would be required for industrial water use only occur during the rainy season.

5.4 Infrastructure

The nearest high-tension power line is 5 km west of the Property following the Puquio – Cora Cora road serving mining operations south of the Property.

The nearest village with electricity and a medical post is 28 km southeast of the Property in the town of Chaviña along the same paved access road.

6.0 HISTORY

Historical information refers to work performed by Esperanza Silver Peru S.A.C. (EPZ) starting in 2010 and continuing until Pucara became operator of the Property beginning in 2013. No information is available regarding exploration activity on the Property prior to ownership by EPZ; no evidence of previous drilling or mining activity has been found on the Property.

Esperanza Silver Peru S.A.C. (EPZ) staked the original block of nine mining concessions (‘EPZ Ichupuca’ series) on the Property in 2010 following geological reconnaissance through the region. Pucara purchased these concessions from EPZ in 2013 for shares in Pucara wherein EPZ retained a 1% Net Smelter Return (NSR) royalty over those nine concessions.

An initial stage of exploration was carried out by EPZ in 2010-12 in which 480 rock chip samples were collected and strongly altered areas were mapped (1:10,000 scale). Geophysical surveys of induced polarization (IP) and ground magnetics were completed during 2012 over the strongly altered areas.

7.0 GEOLOGIC SETTING AND MINERALIZATION

7.1 Regional Geology

7.1.1 Stratigraphy

The southwestern region of the Department of Ayacucho lies along the western flank of the *Cordillera Occidental* underlain by a thick section of volcanic units of Oligocene to Miocene age (34 – 6 Ma). These volcanic units disconformably overlie upper Mesozoic continental shelf clastic and carbonate sediments and intrusive rocks. The nearest exposures of these rocks to the Property are represented by quartz arenite and calcareous sandstone members of the Yura Group, and granodiorite to tonalite of the Coastal Batholith in deeply incised drainages 30 km west of the Property at elevations ±1,000m lower than the Project area.

In the district around the Property, the principal stratigraphic units are, from oldest to youngest, Tacaza Group (early Oligocene), Castrovirreyna Formation (late Oligocene – early Miocene) and Nasca Group (upper Miocene).

Regionally, the Tacaza Group is divided into two units: a basal volcaniclastic unit characterized by medium- to coarse-grained tuffaceous sandstone intercalated with thin strata of siltstone and agglomerates with pebble- to cobble-sized heterolithic clasts; and an upper volcanic unit consisting of andesite lavas and agglomerate flows and rhyolitic ash-flow tuffs.

The Castrovirreyna Formation consists of lithic and pumice tuffs predominantly of andesitic composition with associated volcanogenic sediments. The Nasca Group discomformably overlies the Castrovirreyna Formation with a basal unit of conglomerate flows of andesitic composition and an upper unit of rhyolitic to dacitic ash-flow tuffs with marked fiamme structures. The Caudalosa Formation of late Miocene age disconformably overlies the Nasca Group and is represented by andesite lavas, lithic and air-fall tuffs, and conglomeratic volcanogenic sediments.

The Barroso Group Volcanics of late Miocene to Pleistocene age (7.2 – 0.7 Ma) comprise eruptive emissions from the youngest volcanic complexes in the region (INGEMMET, 1995). In the area of the Property, the Barroso Group is represented by flows from the Corihuiri volcanic center consisting of vesicular basaltic andesite lava flows (*Hoja Chaviña*, 30-o, INGEMMET, 2001).

7.1.2 Structure

Regional structures are oriented along the NW-oriented Andean trend originating from compressive-extensional tectonic cycles throughout Tertiary time that folded the Cretaceous basement sediments and, to a lesser extent the older Tertiary volcanic units along NW-trending axes and developed tensional fault systems trending northeast. Mineral occurrences on a district scale in this region align along trends that follow both the NW Andean trend, conjugate NE and northerly trends. The northerly trend is illustrated by the alignment of mines and prospects in the immediate area of the Property, especially with the Apumayo Mine located 15 km south of the Property.

Caldera structures located along the NW regional trend from the Property have been interpreted from satellite imagery such as in the Lucanas Au-Ag mining district 35 km northwest of the Property.

7.2 Regional Mineral Occurrences

The Property is located on a NW-trending structural corridor of epithermal Au-Ag mineralization that hosts numerous active mines and mineral occurrences extending nearly 200 km in length from the Antapite Mine 150 km northwest of the Property to the Apumayo Au mine 15 km south of the Property (Figure 4). Mineralization along this corridor is associated with eruption of calc-alkaline volcanics of intermediate composition during mid- to late-Miocene age (16 – 6 Ma) as the southern extension of the Miocene metallogenic belt through northern and central Peru (Noble and McKee, 1999).

The Apumayo Mine (Grupo GDC), has been in production since 2013 and is mining at a rate of 15,000 tpd from resources listed as 21.5Mt @ 0.39 g/t Au for 270,000 contained ounces Au (INGEMMET, 2017) in a high-sulfidation, disseminated type gold deposit hosted in Tacaza Group volcanic rocks. The deposit is located in a north-south structural trend that includes the Lourdes Property and has similar geology and alteration assemblages to the Lourdes Project.

The San Juan de Lucanas Mine (Ag-Au-Pb-Zn), 35 km northwest of the Property, has operated sporadically for several decades due to legal and economic difficulties and is now controlled by a cooperative organization of miners. Grades range between 7 – 12 oz/t Ag on intermediate- to low-sulfidation veins.

The Vicuñita and El Rubi mines located 9 km west and 15 km northwest of the Property, respectively, have been worked sporadically on a small scale exploiting narrow epithermal, low-sulfidation Au-Ag veins striking north-south.

Nexa Resources S.A. (*Compañia Minera Milpo S.A.A.*) is currently exploring the Monica Lourdes porphyry copper prospect 11 km north of the Property.

7.3 Property Geology

Field identification of volcanic rocks and the variety of breccias presented on the Property is challenging due to the masking effect of pervasive high-sulfidation alteration that silicified the rock groundmass and either leached or replaced feldspar and ferromagnesian phenocrysts. Pucara geologists have relied on geologic attributes to propose the presence of various diatremes or volcanic vents that may have played an important role in the genesis of potential Au-Ag ± Cu mineralization on the Property. Principal among these geologic characteristics are 1) heterolithic breccia fill with local internal stratification with apparent dips towards the center of diatreme structures, 2) evidence of subaerial exposure within diatreme fill breccias, 3) circular to elliptical morphology in plan and funnel-shaped in section, 4) sub-vertical contacts between diatreme breccias and unbroken wall rock, and 5) alteration envelopes coincident with diatreme boundaries. Further definition of these diatremes will be aided by additional geologic mapping and the acquisition of sub-surface data from the proposed drill program.

Geologic mapping through the district provided by the Peruvian geological survey, INGEMMET, shows that the Property is underlain by volcanic rocks of the Tacaza Group (22 – 18 Ma) and Barroso Group (7.0 – 0.7 Ma). No intrusive rocks have been observed on the Property other than hypabyssal rocks associated with dome complexes.

The Tacaza Group volcanics are comprised of a basal unit of rhyolite to dacite pyroclastic flows overlain by a series of andesite lava and pyroclastic flows. Remnants of andesite flow breccias of the Barroso Group are found capping the Tacaza Group on topographically high points (Figure 5).

7.3.1 Tacaza Group Volcanic Stratigraphy

7.3.1.1 Rhyolite-Dacite Volcanics

The lowest stratigraphic unit of the Lourdes Project area consists of pyroclastic flows of rhyolite-dacite composition with abundant lithic fragments. It forms large, rounded outcrops that are generally soft and easily eroded but is cliff-forming on the eastern side of the project area. The tuff matrix contains elongated vugs (fiamme structures) left by partially flattened pumice fragments indicating partial compaction within the ash-flow sheet. Lithic fragments consist of a mix of andesite volcanic rock with minor amounts of sedimentary rock from the underlying Mesozoic units.

A rhyodacite dome complex lies along the western boundary of the Property. Ash-flow tuff, lavas and two hypabyssal plugs(?) form a nearly circular outcrop measuring 900m x 1,000m of unaltered, light-colored volcanic rocks.

A dacite dome complex has been tentatively identified northeast of the Ayani Vent as indicated by deformation of overlying silicified andesite units and lack of alteration in the dacite in contrast to strongly altered volcanic host rocks (Balleweg, 2017c). Post-mineral intrusions such as this dome complex may account for unaltered areas on the Property as found in the northern central sector of the Property.

Underlying the rhyodacite unit is a thick section of andesite pyroclastic flows and a lower unit of intercalated volcaniclastic sediments with volcanic flows. These volcanic units unconformably overlie the Puquio Formation which consists of tuffaceous sandstone, siltstone and shale, and intercalated with pyroclastic flows.

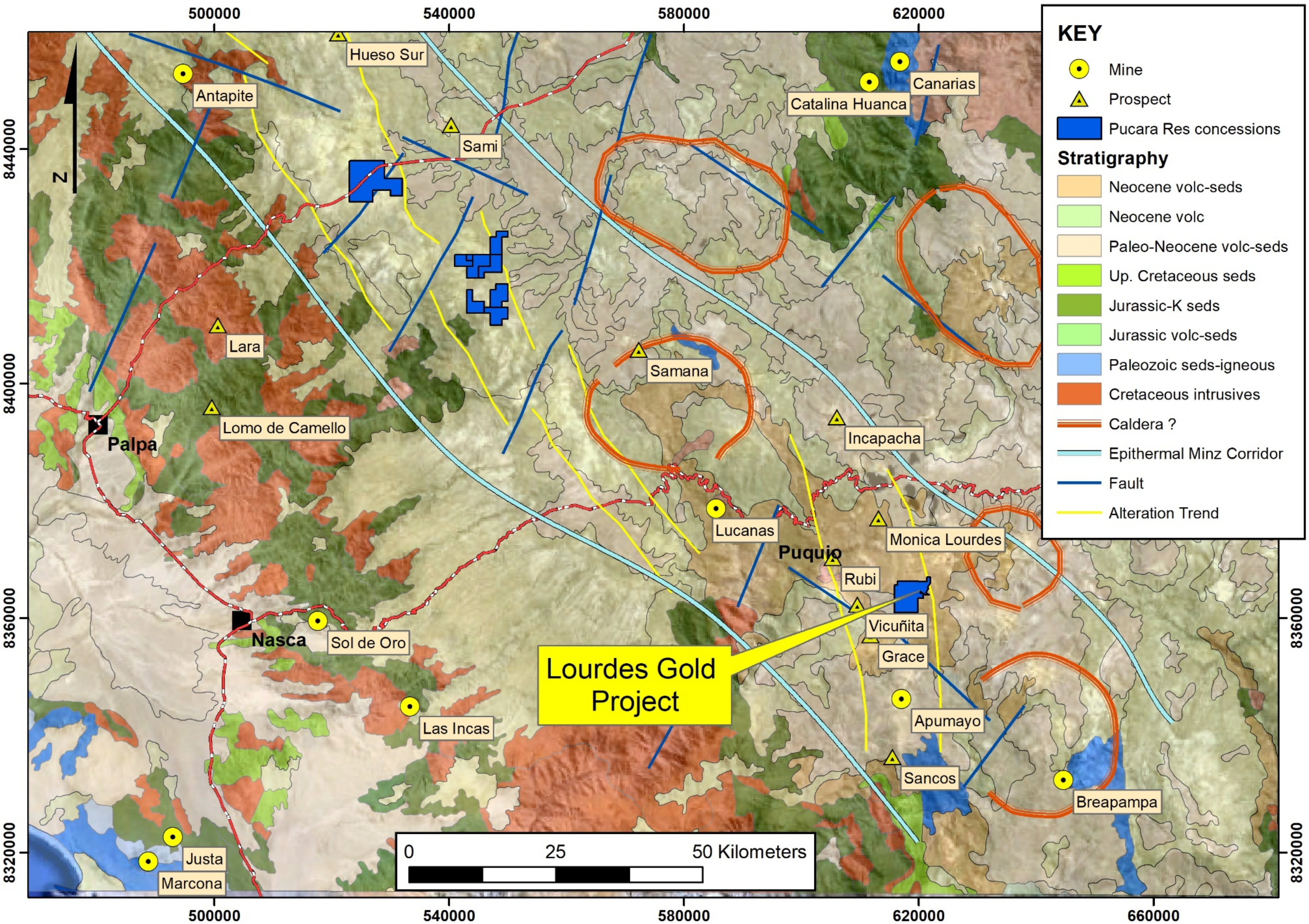

Figure 4. Mines and prospects along epithermal Au-Ag mineralization corridor

7.3.1.2 Andesite Lava Flow Units

Andesite flows and flow breccias overlie the rhyodacite unit. An interior zone of massive lava having a dense, dark gray to black matrix and an aphanitic texture containing very fine-grained plagioclase phenocryst laths is locally present. Unaltered lava outcrops typically show a fine, platy parting along flow foliation. The interior section grades downwards into auto-breccias that formed as the lava cooled along its lower contact while still in motion resulting in a conglomeration of cobble- to boulder-sized breccia blocks of the same aphanitic lava (shown in unaltered outcrop from outside the Property, Figure 6). Some lithic-rich flows on the Property are clearly lahars that accumulated a wide range of lithic sizes from cobbles to boulders, generally sub-angular to sub-rounded, in an earthy matrix generally altered by subsequent hydrothermal fluids. The irregular and discontinuous nature of these breccia flows complicates the recognition of individual flow units, especially in areas of intense alteration.

Parting along flow units is found in several outcrops on the Property. In the Central Zone, parting suggests that these flow units have a gentle dip to the east concordant with underlying felsic tuffs. Where all rock units are highly altered, parting helps distinguish between volcanic flow breccias and vertically oriented hydrothermal breccias

Detailed mapping by Pucara geologists defined three sub-units in the andesite volcanic stratigraphy exposed in the central sector of the Property:

1) Lower Andesite – fine-grained, porphyritic, phenocryst-rich, magnetite-bearing andesite that outcrops extensively along the west side of the Property and is the host of the Southwest Diatreme;

2) Upper Andesite – coarse grained, phenocryst-poor and non-magnetic andesite overlying the Lower Andesite,

3) Andesite Porphyry – coarse-grained, phenocryst-rich, magnetite-bearing andesite, distribution not well constrained.

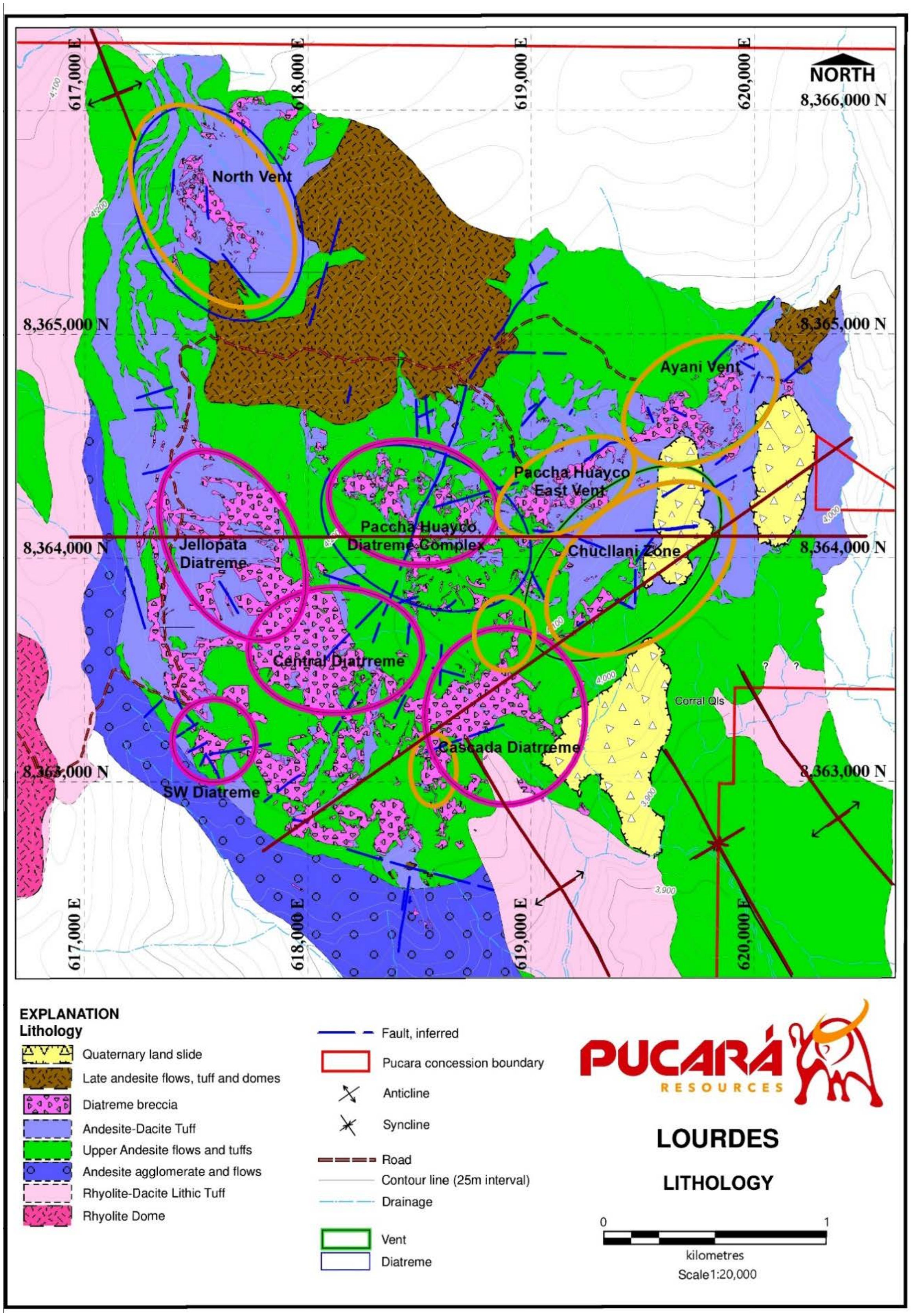

Figure 5. Property geologic map, Lourdes Project. (Pucara field mapping, 2019).

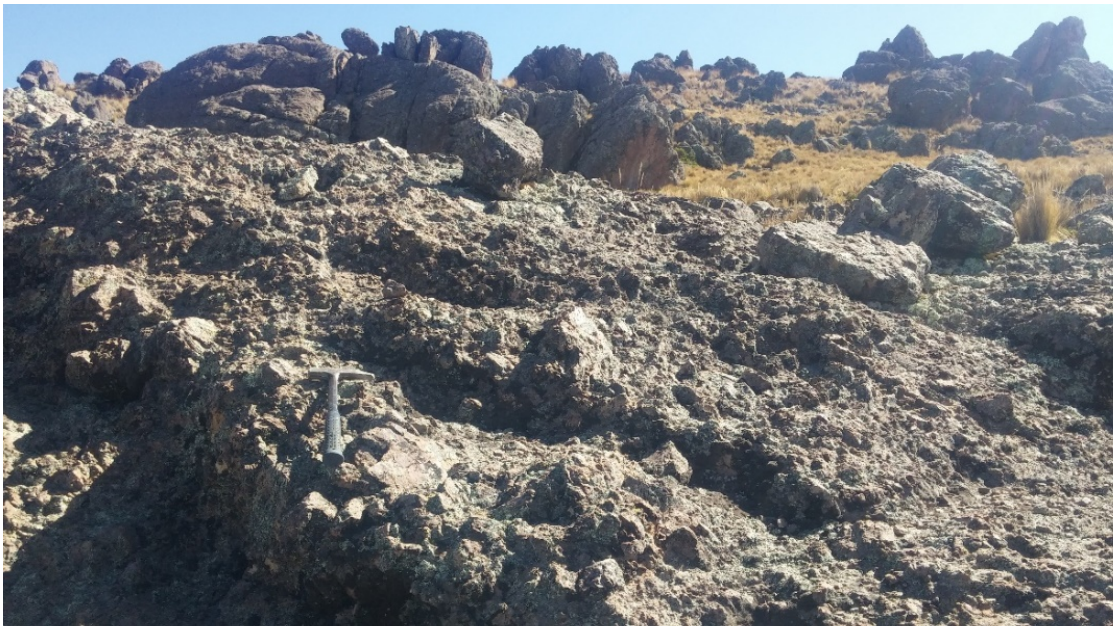

Figure 6. Andesite agglomerate flow, unaltered, from outside of the Property. The parting surface shows the unit dips from left to right in the photo.

7.3.1.3 Barroso Group Volcanic Stratigraphy

Remnants of Barroso Group volcanic rocks are found on topographically high points in the western sector of the Property overlying Tacaza Group andesite. The Barroso Group volcanic rocks (Figure 7) are represented by unaltered units of andesite to trachyandesite pyroclastic flows and minor lava flows directly overlying hydrothermally altered Tacaza Group volcanics along the primary ridge line in the Property's Central Zone.

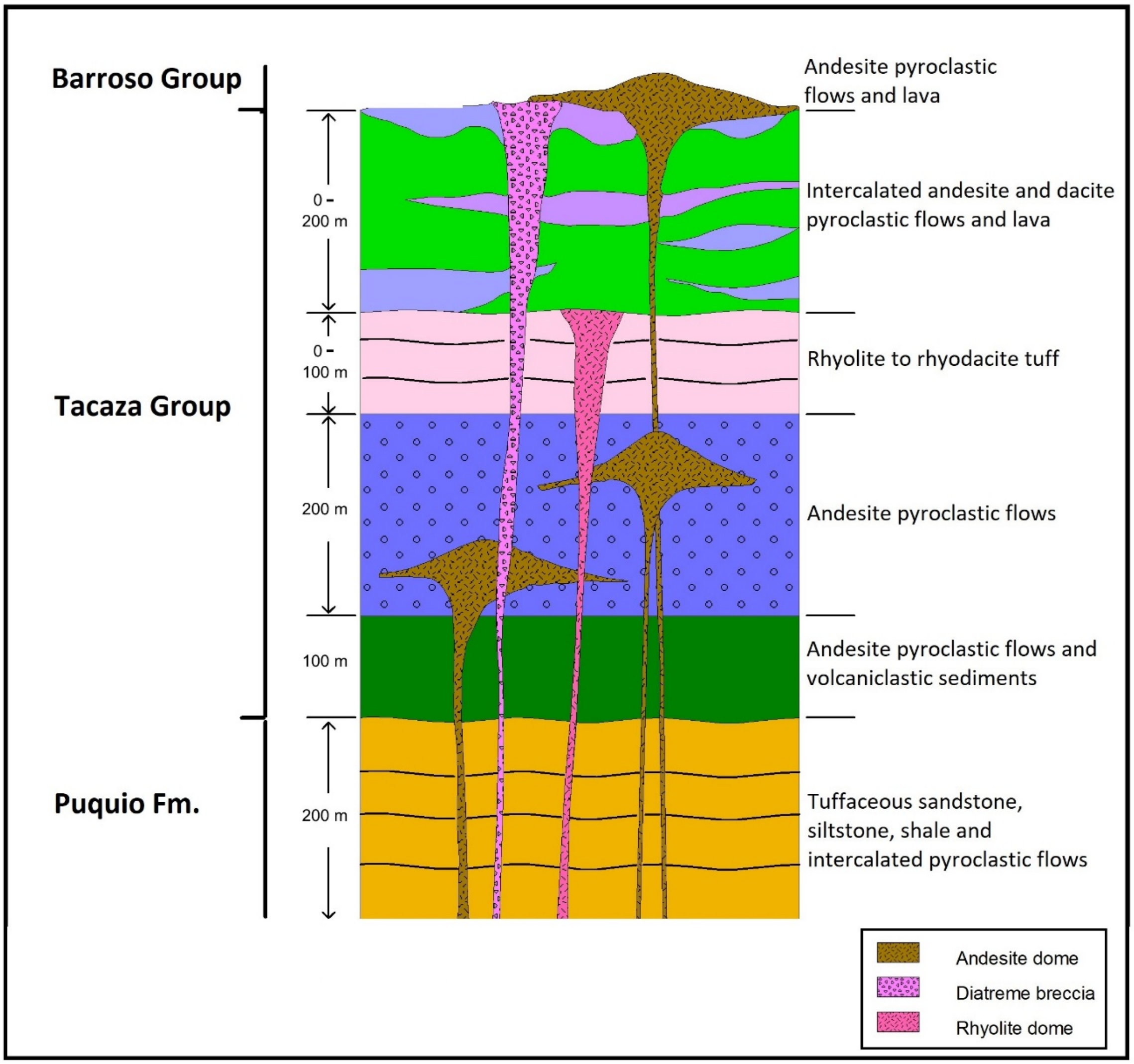

Figure 7. Stratigraphic column, Lourdes Project.

7.3.2 Structure

Regional mapping shows a predominantly northwesterly structural grain following the Andean Trend (Figure 8), a trend that is reflected across the Property in orientation of fold axes and geochemical anomalies. A secondary orientation to the northeast has been defined by mapping faults, linear breccia structures and alignment of geochemical anomalies across the Property. A third orientation north to NNE is reflected by a few structures mapped on surface and several geophysical anomalies (resistivity and chargeability) as well as principal drainages on the Property. Satellite imagery of reflectance spectroscopy reveals a local structural grain in the Central Zone oriented west-northwest.

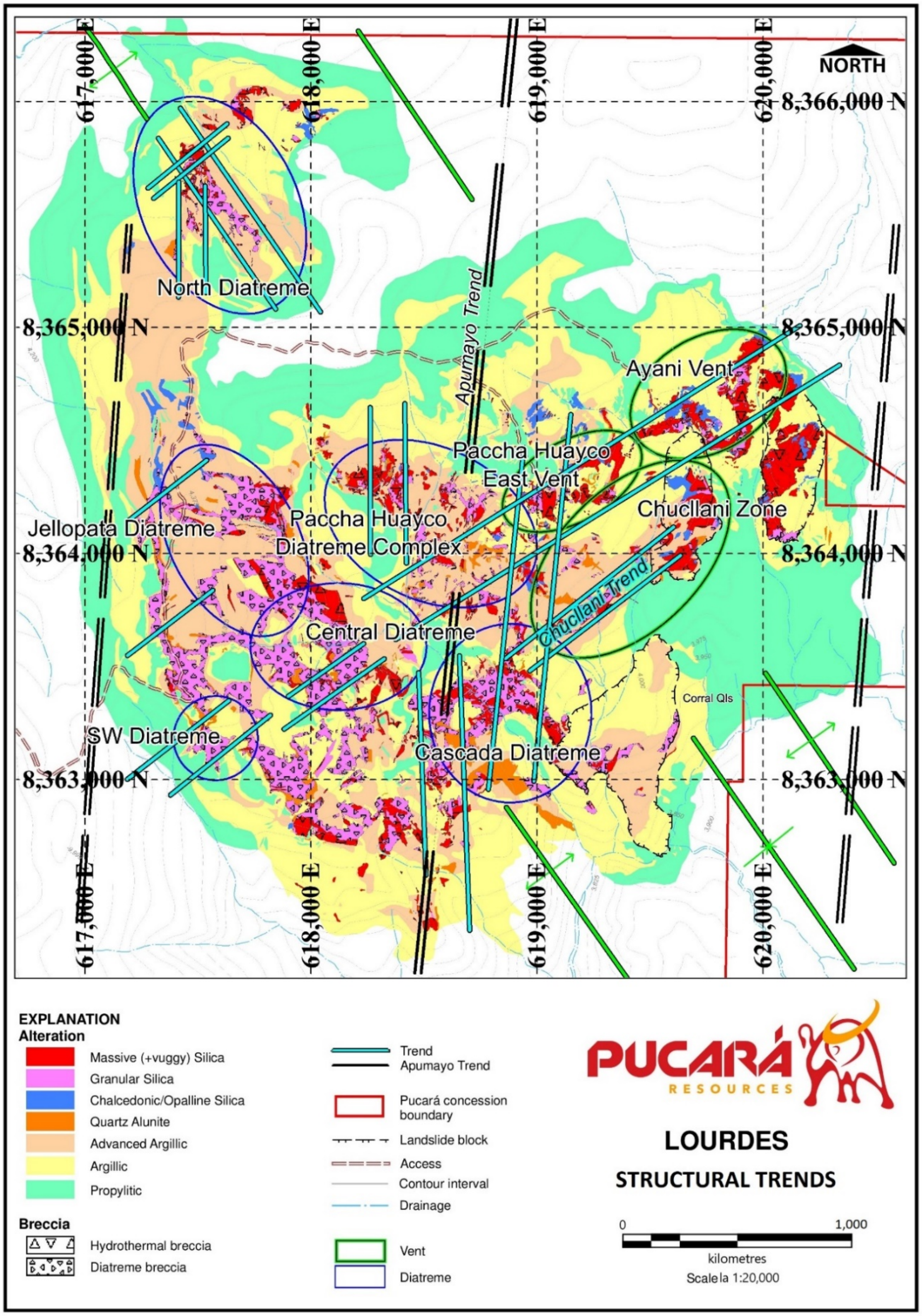

Figure 8. Principal structural trends, Lourdes Project

Andesite and rhyodacite volcanic flow units at the base of the exposed volcanic pile are folded along NW-trending axes through the Property. Three evenly spaced, sub-parallel fold axes have been recognized in the southern sector of the Property, and two similar axes directly north of the concession boundary. The southwestern-most anticlinal axis appears to continue through to the northern end of the Property. In the Property's western sector, all volcanic units display a low-angle dip to the east, apparently as the western limb of a syncline.

Geochemical anomalies from rock and soil surveys are coincident with both NW and NE structural trends. These anomalies align with the NW-trending axial planes of the folded volcanic rocks from the Cascada zone through to the North Zone. Gold geochemical anomalies show a strong coincidence with extrapolated points of intersection between the three NW-trending fold axes and the NE-trending Chucllani structural trend.

Landslide blocks have been identified along the eastern portion of the Property where large sections of broken bedrock appear intermixed with colluvium. Geochemical anomalies found in these suspected landslide blocks match those found in their respective zones of origin.

7.3.3 Hydrothermal Alteration

The volcanic stratigraphy across the Property has been subject to pervasive high-sulfidation alteration across an area measuring 3,000m x 1,500m with a satellite zone of 800m x 400m (North Vent). Zonation of alteration is indicated by suites of alteration minerals assembled as a function of temperature and pH of mineralizing fluids, controlled by either depth from paleosurface or distance above the magmatic source that drove the hydrothermal system. Mapping of high-temperature alteration mineral assemblages indicates that the center of the hydrothermal system is located in the central sector of the Property.

The degree of alteration at any given outcrop is in large part controlled by the original permeability of individual volcanic units. It is not uncommon to find a strongly silicified volcanic flow unit, most likely a lithic or air-fall tuff, in contact with a weakly altered unit of dense lava.

Four high-sulfidation alteration mineral assemblages have been recognized on the Property: silicic, advanced argillic, argillic and propylitic (Figure 9). Silicic and advanced argillic alteration are most directly related to geochemical anomalies, although supergene remobilization of metals in argillic alteration should also be considered.

7.3.3.1 Silicic Alteration

Four styles of hydrothermal silicification are noted on the property represented by massive, vuggy, granular and cryptocrystalline silica. Original permeability of host volcanic units and location within the hydrothermal system are factors in the style of silicification occurring in zones of advanced argillic alteration.

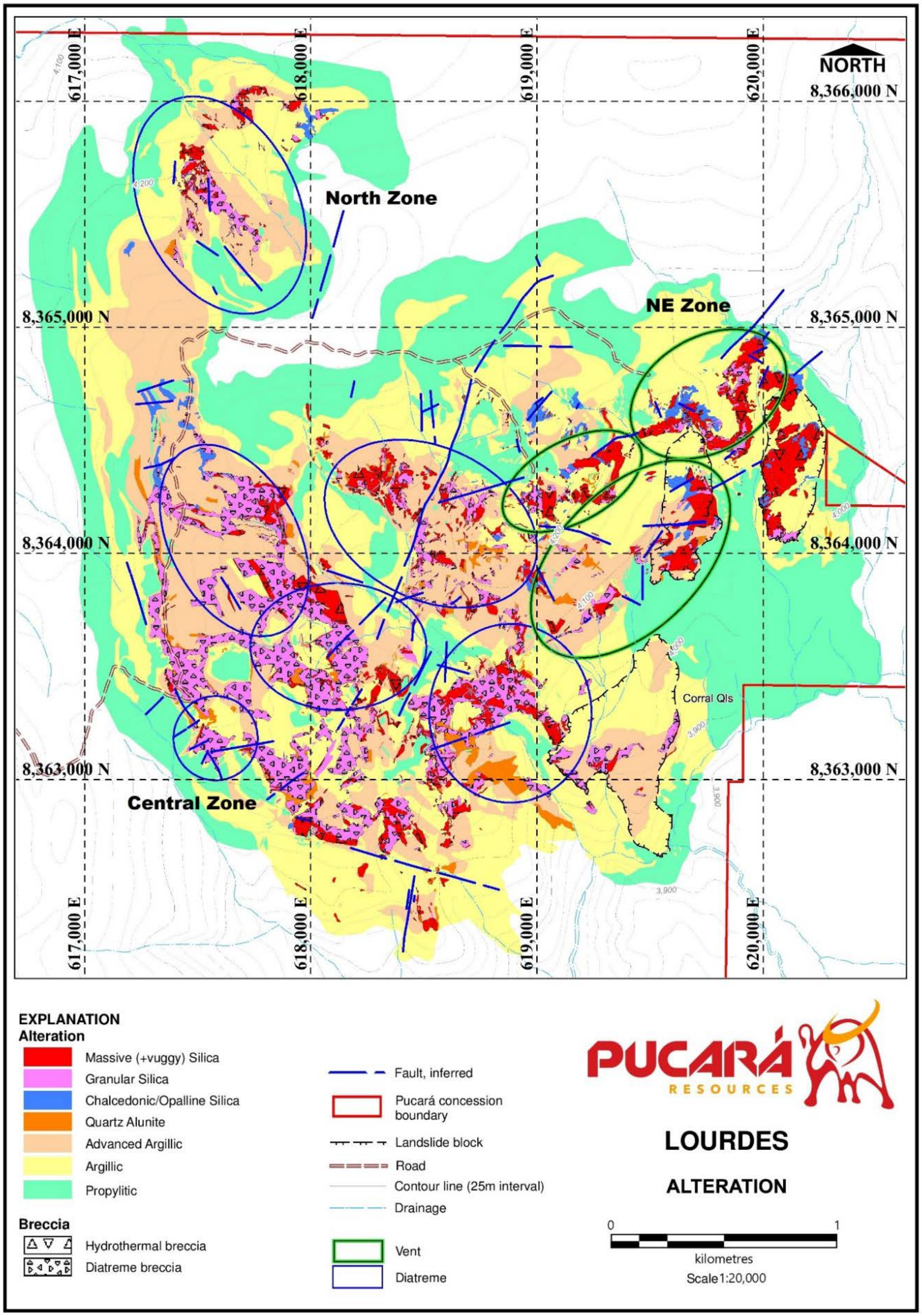

Figure 9. Wallrock alteration map, Lourdes Project (Pucara field mapping, 2019).

Massive silica replaces the matrix of host volcanic rocks with a slightly milky massive quartz. Silica replacement may be so complete as to leave no relict texture of phenocrysts, lithic clasts or original matrix. Where silica replaces the rock matrix leaving leached casts of feldspar phenocrysts the resultant spongy-looking texture is termed ‘vuggy silica’. Size of individual vugs and the overall ‘vuggy’ texture is directly related to the size and quantity of phenocrysts present in the volcanic matrix, except for quartz phenocrysts which are unaffected by alteration.

Massive silicic alteration commonly features dark-gray zones that likely represent a high content of fine pyrite. Silicification may also be manifested as fine quartz veinlets with or without pyrite, generally as sheeted veins or as stockwork of quartz veinlets with a dominant orientation. Fine black siliceous veinlets are locally associated with anomalous Au values.

Granular quartz alteration is a friable porous and permeable silica alteration type consisting of loosely aggregated quartz grains that may represent zones of predominately quartz-alunite (advanced argillic alteration) that have been oxidized (Hedenquist et al, 2000) or zones of steam-heated alteration. Generally, steam-heated alteration is found above the paleo-water table, characterized by fine grained, powdery cristobalite, alunite and kaolinite and absent any quartz veinlets. The majority of Lourdes diatremes and vents are pervasively and intensely altered to granular silica. Granular silica grades into massive silica at depth in the Cascada Diatreme. Granular silica hosts ore-grade mineralization at the Apumayo Mine.

Stratiform cryptocrystalline to opalline silica is present in the northern part of the Jellopata Diatreme area and the distal portions of the Paccha Huayco – Ayani trend. Both occurrences appear to be in the distal portions of the hydrothermal system representing a paleo-water table level. Large blocks of cryptocrystalline silica are found in the breccia complex in the North Vent suggesting that this silicified unit may have covered the greater part of the Property area at one time prior to erosion that formed the current surface topography.

Figure 10. Vuggy silica clast with native sulfur in coarse breccia facies, Southwest Diatreme central root.

7.3.3.2 Advanced Argillic Alteration

Advanced argillic alteration on the Property is defined by the replacement of the original volcanic rock matrix by quartz-alunite (or quartz-pyrophyllite) and replacement of feldspar and ferromagnesian phenocrysts by alunite.

Advanced argillic alteration is recognized on the Property as including quartz-alunite ± kaolinite ± pyrophyllite. With the advantage of having Pima spectral data available, advanced argillic alteration may be divided into low and high temperatures zones based on the presence of pyrophyllite as an indicator mineral of higher temperatures of formation.

Characteristics of steam-heated alteration – fine grained, powdery cristobalite, alunite and kaolinite – are found along the east side of a prominent ridge running along the western border of the central sector. Hydrothermal alteration generally is accompanied by quartz as veinlets or silicification in the groundmass, whereas steam-heated alteration does not generate quartz veinlets, but instead is characterized by powdery, granular quartz and alunite in the rock matrix.

Advanced argillic alteration with quartz-alunite displays moderate to strong silicification of the volcanic rock matrix and the replacement of feldspars and pumice by alunite as pinkish, fine-grained masses or by crystalline tabular forms in the larger vugs. At the margins of this style of alteration kaolinite also replaces feldspar. The silicic matrix is commonly dark gray – possibly due to the presence of very fine pyrite.

Advanced argillic alteration with quartz-pyrophyllite is found as envelopes around quartz-alunite through the central sector. This suite also includes alunite, diaspore and topaz as indicated by the spectral survey. The presence of pyrophyllite represents the boundary between high and low temperature epithermal zones by having a temperature of formation significantly higher than that of near-surface, advanced argillic alteration assemblages (alunite + dickite + kaolinite + quartz ± diaspore). Topaz is found only in the North Vent as identified in the spectral survey.

Advanced argillic alteration also occurs as alteration envelopes around the diatreme margins with relatively narrow envelopes in the near-vertical deeper portions and broader envelopes in the upper-level low-angle portions. It occurs between granular silica and argillic assemblages.

7.3.3.3 Argillic Alteration

Zones of alteration where the volcanic rocks are strongly altered to clay occur as broad zones around diatremes and vents, representing peripheral zones around advanced argillic alteration zones. Characteristic clay minerals in argillic alteration are kaolinite + illite + smectite.

Argillic alteration on the property is noted where the rock matrix and feldspar phenocrysts are altered to white clay; mafic minerals are altered to iron oxides. Pyrite is found locally disseminated throughout the rock matrix but predominantly oxidized. Silicification of the rock matrix in this type alteration ranges from weak to moderate as a function of the permeability of the original volcanic host rock.

7.3.3.4 Propylitic Alteration

Propylitic alteration is found throughout the Property in areas peripheral to the more strongly altered zones characterized by chlorite with minor pyrite and weak silicification in the host rock matrix.

7.3.3.5 Potassic Alteration

A stockwork vein zone of magnetite and molybdenite is exposed along a secondary drainage aligned east-west bisecting the Central Diatreme. The stockwork is gradational into crackle and jig saw breccia textures with highly angular fragments in a magnetite-rich matrix. The stockwork is multi-stage, with late veinlets crosscutting earlier veinlets and breccias. Veinlets appear to be monomineralic magnetite with accessory molybdenite, although a more detailed examination may reveal minor potassic feldspar and quartz.

7.3.4 Breccias and Diatremes

Recent geologic mapping by the Pucara exploration team has led to the recognition of multiple diatreme and volcanic vent structures on the Property. Integration of the exploration program's geochemical, geophysical and geological surveys indicate that the diatremes and vents are closely related to geochemical anomalies and suggests that they may have played an important role in the development of mineralization on the Property.

7.3.4.1 Terms

Use of breccia terminology has been fluid in recent geological literature thus warranting a clarification of terms used in this report. The terms 'diatreme' and 'maar' are included in this list since most breccias found on the Property are interpreted to be related to diatreme structures. These definitions are summarized from Davies and Cooke (2008).

Maar volcanoes comprise a central crater surrounded by low rims (tens of meters) of base-surge and fallout deposits resulting from phreatomagmatic eruptions. Surface morphology and the amount of slumping of blocks on surface back into the crater depends on the nature of the wall rocks (e.g., "hard-substrate" vs. "soft-substrate" maars).

Diatremes are downward-tapering, subsurface volcanic conduits formed at least in part by explosive phreatomagmatic eruptions. Diatremes are filled by volcaniclastic deposits, referred to as 'diatreme breccia', exhibiting varying degrees of stratification and including collapsed wall-rock blocks. Their cross-sectional areas are similar to those of maars and their vertical extents may be several kilometers, including root zones and feeder dikes.

Juvenile clasts are derived by fragmentation of a parental magma. Subsurface interaction of magma with ground water or hydrothermal fluid may produce distinctive ragged-shaped ("wispy") juvenile magmatic clasts. These can occur in the root zones of a diatreme and are a key feature to recognize as they can provide evidence of a direct magmatic contribution to breccia formation and help to infer fragmentation processes. Their irregular shapes are easily modified during transport and abrasion resulting in low preservation potential.

Hydrothermal breccia is defined here as a coarse-grained clastic aggregate generated by the interaction of hydrothermal fluid with magma and/or wall rocks, irrespective of the source of the hydrothermal fluid. Fragmentation may be explosive or it may be driven by hydraulic fracturing (Sillitoe, 1985). Explosive fragmentation may be the result of direct contact of magma with meteoric water (phreatomagmatic breccia – indicated by the presence of juvenile clasts) or indirect contact of magma with meteoric water (phreatic breccia – indicated by the absence of juvenile clasts).

Matrix is the fine-grained clastic components of a breccia found between larger clasts. Grain size of the matrix may vary but is generally less than 2 mm.

Cement is the crystalline component within a clastic rock or fracture. There are two main types of cement: minerals precipitated from an aqueous fluid (water and/or vapor) and minerals crystallized from magma. Cement precipitated from an aqueous fluid may include ore minerals (i.e., chalcopyrite-cemented breccia) and gangue minerals (i.e., quartz-cemented breccia) and is a diagnostic component of most hydrothermal breccias. Cement precipitated from a magma produces crystalline igneous rock (i.e., rhyolite-cemented breccia).

In this report, the terms 'diatreme breccia' and 'hydrothermal breccia' are used to refer respectively to 1) the fill material of diatremes, and 2) vertical and/or stratiform tabular breccia structures cutting both wall rock and diatremes.

7.3.4.2 Diatremes and Volcanic Vents

Several large diatreme structures were identified as the result of detailed geologic mapping by Pucara geologists. Key features leading to the recognition of these diatremes are:

- breccia textures composed of comminuted volcanic wall rock that had been subjected to silicic and local advanced argillic alteration,
- breccia that displays locally poor to moderately well-defined stratification commonly dipping toward the center of the diatreme,
- sub-vertical contacts between breccia and relatively unbroken or massive wall rock, circular to elliptical form in plan and funnel-shaped in section and, where preserved, an upper zone with outwardly flaring contacts, and
- contrast in type of wall rock alteration observed at the breccia/wall rock contact.

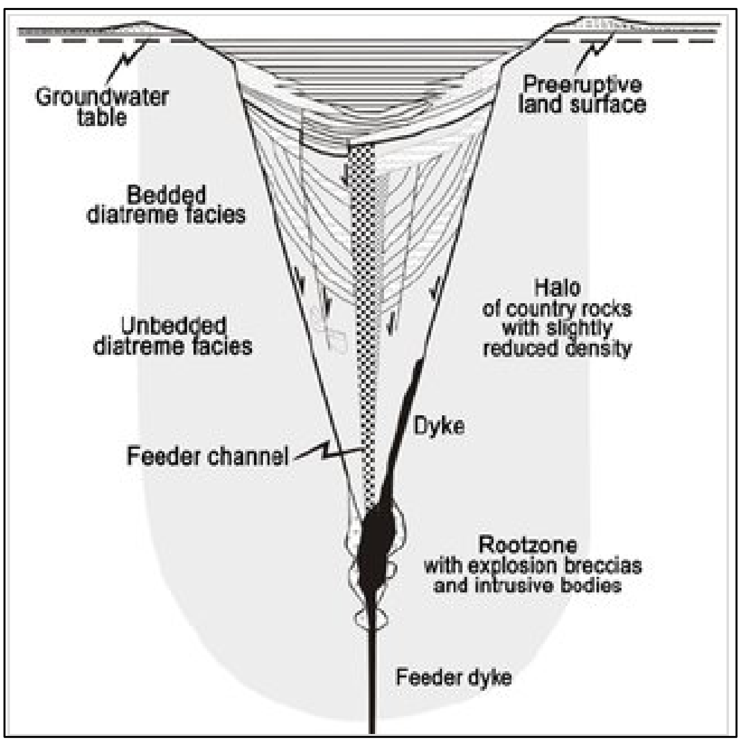

Figure 11. Schematic section of a diatreme illustrating the occurrence of stratified or bedded diatreme breccia in the upper portion of the structure and unstratified diatreme breccia in the lower portion. (modified from Lorenz, 1986).

Volcanic vents were recognized throughout the Property as circular structures with unstratified matrix smaller in size as compared to diatremes, suggesting these vents were formed by less catastrophic phreatic eruptions.

Diatremes on the Property appear to have played an important role in hydrothermal alteration and mineralization of the host volcanic rocks. All diatremes and volcanic vent areas are filled with breccia altered to granular silica and marked by distinctive advanced argillic alteration envelopes. The two main diatremes, Jellopata and Central, both contain pebble- to cobble-sized clasts of massive and vuggy silica alteration within stratified breccia infill indicating that an early high-sulfidation alteration event pre-dated diatreme formation. Granular silica alteration overlies massive and vuggy silica alteration where local topography provides exposure to root zones of the diatremes.

Key to identification of diatreme breccias is the presence of a clast-rich breccia supported by a matrix comprised of finely comminuted wall rock (Figures 12 and 13). The matrix may show some degree of stratification indicating its position in the upper portion of the diatreme (Figure 14). Locally these breccias may be clast-supported with abundant large, sub-angular clasts 3 to 15 cm in size, polymictic, and pervasively altered to granular silica, although other alteration assemblages may be present. Margins of diatremes are conclusively identified where stratified breccia fill material is found juxtaposed against intact wall rock (Figure 15).

Bedding attitudes are highly variable within the proposed diatremes, changing more than 90 degrees along strike and from sub-horizontal to vertical dips in less than 10 meters. Sedimentary textures of reverse-graded bedding and local cross-stratification are present. Crude stratification defined by variations in clast size is common within the breccia mass including a coarse-grained facies without stratification.

Figure 12. Typical finer-grained breccia texture of stratiform portions of the Central Diatreme with small, angular to sub-angular silicified clasts in a granular silica matrix.

The presence of juvenile clasts is strong evidence of a phreatomagmatic eruption. However, determining the presence of juvenile clasts in breccias on the Property is difficult due to pervasive and intense advanced argillic alteration.

At present, the covered margins of several diatreme and volcanic vent structures are not well-defined and may be re-interpreted using sub-surface data from the proposed drill program. All granular silica alteration is interpreted as hosted exclusively in diatreme breccia fill that may cross mapped diatreme boundaries. Conversely, what has been interpreted as diatreme fill breccia later altered to granular silica may be the product of strongly silicified wall rock that was comminuted to a fine granular breccia matrix as a result of phreatomagmatic eruptions.

Figure 13. Silicified clasts (massive and vuggy silica) in a breccia matrix of granular silica, upper central portion of Southwest Diatreme.

Figure 14. Stratified phreatic breccias and/or volcaniclastic conglomerates with silica clasts in the upper central portion of the Southwest Diatreme, granular silica matrix.

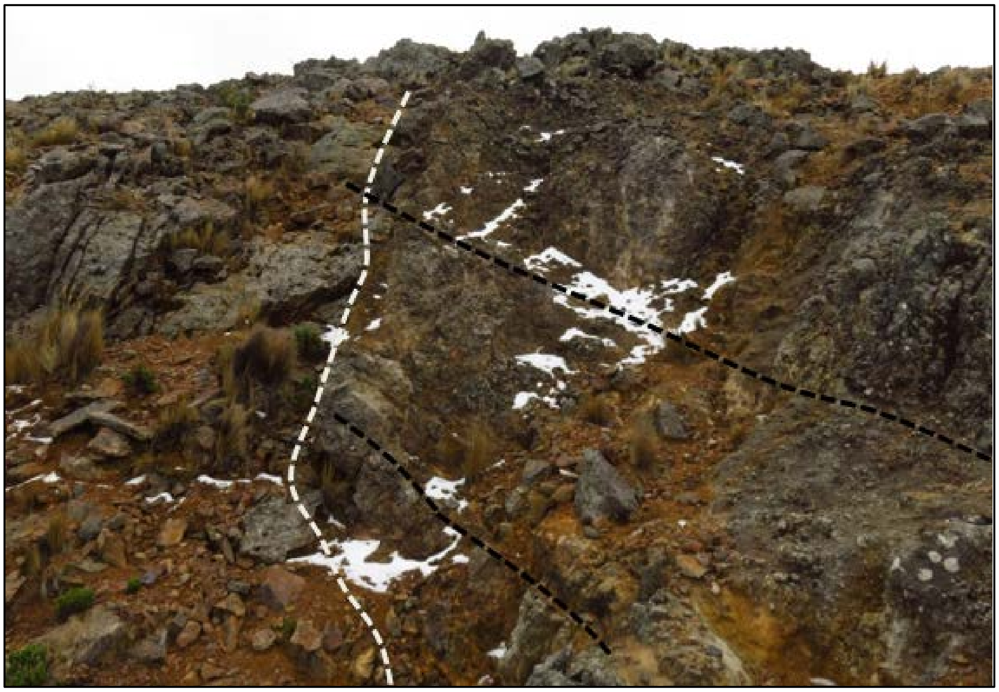

Figure 15. Upper west margin of the Southwest diatreme with inward-dipping, crudely stratified fill breccia (right) in contact with advanced argillic-altered andesite (left).

7.3.4.3 Hydrothermal Breccia

Linear structures control hydrothermal breccias in the central sector of the Property cutting both wall rock and diatreme fill material suggesting that they represent a later event than the diatremes. Hydrothermal breccias contain angular, pebble to cobble-sized clasts of silicic and quartz-alunite altered volcanic wall rock in a limonitic silica matrix, differentiated from diatreme breccias by their tabular form in outcrop and abundance of Fe-oxide (limonite with minor hematite) after pyrite. These breccias report a significant number of gold anomalies in rock chip samples across the Property.

In the Southwest Diatreme, a linear structure of massive to vuggy silica varying in width from 1 to 3 meters occurs in the diatreme near contact with wall rock (Figure 16). This structure is interpreted as a hydrothermal breccia with locally abundant veinlets of dark gray silica and minor amounts of native sulfur filling vugs. Wall rock along this structure is strongly silicified as are most clasts in the breccia suggesting these clasts are from the same wall rock.

Late-stage hydrothermal breccias with limonitic matrix are preferentially located at the contacts of diatremes and vents. They also occur in low-angle structures that dip inward toward the central vent area, possibly emplaced in dilatant zones during post-venting subsidence. Narrow structurally-controlled limonite matrix breccias are also present external to the diatremes and appear to exhibit a spatial relationship to the diatreme.

Figure 16. Northeast-trending sub-vertical structural feeder zone comprised of granular silica, massive silica, and limonite matrix breccia leading into southwest margin of Cascada Diatreme.

7.4 Alteration and Mineralization in Exploration Target Zones

The most significant diatremes and vent structures are Jellopata, Chucllani, Ayani, Paccha Huayco, Central, Southwest, Cascada, and North, described briefly below. Descriptions of these structures are derived from Pucara internal field reports (Balleweg, 2017a – 2017c) and corroborated by the authors' field observations.

7.4.1 Jellopata Diatreme

The Jellopata diatreme is the most recently recognized diatreme on the Property located in the central western sector at the highest elevation in the Lourdes system (4,350m) with a surface alteration assemblage characteristic of upper levels of high-sulfidation gold deposits. The exposure level of the Jellopata target is believed to be above the level of gold deposition; weak associated soil gold and arsenic anomalies may indicate location over a blind target.

The exposed portion of the diatreme is estimated to measure 600m by 250m as outlined by advanced argillic alteration and granular silica breccias. Stratiform cryptocrystalline silica extends outward from the inferred northern margin of the diatreme. The diatreme breccia is comprised of milled silicified clasts in a granular silica matrix, often with heavy brown limonite concentrations. The breccia has a much wider advanced argillic alteration halo compared to other vent/diatreme centers on the Property.

7.4.2 Chucllani Vent/Breccia Center

The Chucllani target area is a broad area of intense alteration on the northeast side of the Lourdes system consisting of four separate exploration target areas over approximately 800 meters of strike length. Alteration zonation is similar to other diatremes on the Property with granular silica in the diatreme breccia grading into advanced argillic and argillic alteration outboard from the diatreme.

The primary drill target consists of a northeast-trending zone measuring more than 200m by 75m of granular silica alteration yielding geochemical values up to 0.64 g/t Au from outcrop. A secondary target lies 200 meters to the northeast along trend where rock chip samples returned up to 1.7 g/t Au from granular silica outcrops. Alteration zoning indicates that the majority of the diatreme breccia is down-faulted to the east and may have been subject to displacement by landslide. A strong westerly-plunging resistivity anomaly that is believed to be the eastern margin of the Paccha Huayco diatreme is also present in the area.

The Chucllani target area exhibits moderate to strong soil gold and trace element response. Geochemical sampling along the southwest margin of the target returned strongly anomalous gold values (up to 0.56 g/t Au) from limonitic granular silica breccias. This zone is characterized by breccia with intense granular silica alteration exposed up to 300 meters in strike length. Recent mapping has closed the zone to the northeast by establishing the granular silica/argillic alteration contact. The zone has a strong structural fabric oriented N70E.

Most margins of the breccia are covered by thick colluvium and landslide deposits, but an outcrop displaying strong quartz-alunite alteration located directly up-slope from the breccia center appears to dip into the central granular silica breccia mass suggesting that a broad zone of silicic alteration continues under cover. The large Corral landslide block almost certainly originated in this area, subsequently displacing strong gold and multi-elements geochemical soil anomalies currently reported from this landslide block.

The deeply incised drainages directly below the Chucllani vent breccia contain discontinuous outcrops of granular silica alteration with strong Au anomalies (≤ 1.7 g/t Au) in rock chip samples. These occurrences are strongly fractured, apparently faulted, and intermixed with colluvium giving the appearance of a large landslide block originating in the Chucllani trend. This conclusion is supported by geophysical surveys (IP resistivity) that suggest the granular silica alteration is rootless and has a maximum thickness of 100 meters.

7.4.3 Paccha Huayco Diatreme Complex

The Paccha Huayco Diatreme Complex is in the central sector of the Property at the three-way intersection of the dominant structural trends on the property: the northwest fold axis trend, the northeast Chucllani structural trend, and the north – south Apumayo trend. The target area is underlain by a large funnel-shaped resistivity anomaly that is interpreted to represent a diatreme similar to the Jellopata target.

The resistivity anomaly and inferred diatreme are elliptical in plan, oriented along the Chucllani structural trend and measuring 1,000m by 500m. The resistivity anomaly occurs below pervasive advanced argillic alteration with granular and massive silica focused at structural intersections. Doming within the diatreme is suggested by the strongly arcuate form of the stratiform upper portion of the resistivity anomaly in section and a radial pattern of structures with advanced argillic alteration observed on surface. Weak gold geochemical anomalies in soil and rock chip samples occur on the west and southeast flanks of alteration overlying the resistivity anomaly. The surface alteration assemblage consists of chalky granular silica and cryptocrystalline silica possibly representing a steam-heated zone at the paleosurface. The vertical range of the target area is 450 meters from the surface elevation at 4,250m down to 3,800m elevation.

7.4.4 Ayani Vent

The Ayani zone is located at the extreme northeastern portion of the Lourdes system and consists of a structural zone measuring 700m x 150m with silicified breccias, proximal stratiform silicic alteration, a vent breccia with chalcedonic silica at the upper portions, and gold-bearing granular silica breccia at the margins. A prominent knob comprised of cryptocrystalline silica is interpreted to represent the upper portion of the vent complex, grading downward into granular silica in a structural zone comprised of limonite matrix breccia with angular cryptocrystalline silica clasts.

Gold-bearing granular silica (up to 0.87 g/t Au in rock chip samples) is exposed at the edge of colluvial cover in the lower portions of the zone, suggesting that the colluvium may be concealing additional non-resistant mineralized granular silica. Gold and arsenic soil sample anomalies appear to be sourced in the zone.

7.4.5 Cascada Diatreme

The Cascada Diatreme has the greatest vertical exposure of the vent centers and diatremes identified to date with over 200 meters of relief. Granular silica breccias occurring high in the complex grade downward into lenticular massive and vuggy silica. The perimeter of the structure has been only partially delineated by mapping. No internal stratification of the breccia matrix has been noted suggesting exposure of the diatreme structure at a low level.

The northwest margin of the Cascada Diatreme has a sharp sub-vertical contact with advanced argillic alteration. All breccia margin contacts dip inward toward the inferred vent center, with the stratiform components thickening toward the inferred center. Structurally controlled hydrothermal breccias with characteristic limonite matrix frequently occur at the breccia margins cross-cutting the granular silica alteration.

Granular silica breccias cover an extensive area from the southwest margin downward toward the inferred vent center, with multiple zones of cross-cutting hydrothermal breccias and areas of structurally controlled silica alteration. The granular silica is transitional with depth to fine grained, sucrosic, massive silica with local vuggy textures near the drainage bottom. The silica alteration becomes more limonitic with depth, suggesting increasing primary pyrite concentrations. Numerous silicified structural zones crosscut the lower portions of the diatreme near the level of transition from granular silica to massive silica alteration.

Granular silica alteration and granular silica breccias identical to the breccias of the other vent areas are also well-exposed on the north side of the central Cascada drainage. They directly overly a thick, lenticular, sub-horizontal, stratiform body of massive to vuggy silica with a westerly-dipping basal contact, thickening toward an apparent sub-vertical silicified root. Silicified north-trending structures extend vertically from the underlying stratiform silica unit into the overlying granular silica alteration.

At least three stages of alteration and brecciation are recognized in the Cascada Diatreme: diatreme brecciation, pervasive silicification, and later structurally controlled hydrothermal brecciation with silica cement. The stratiform massive silica in the lower portions of the target area contains gold anomalies in rock chip samples up to 0.58 g/t Au as well as a strong soil gold geochemical anomaly.

7.4.6 Central Diatreme

The Central Diatreme is located in the south-central portion of the Lourdes hydrothermal system where chaotically stratified volcaniclastic sediments and breccias suggestive of a diatreme occur, particularly the presence of internally stratified breccias with subaerial deposition textures.

The apparent diatreme center has both coarse and fine-grained fragmental diatreme fill material consisting of well-stratified phreatic breccias and volcaniclastic sediments. Minimum dimensions of the core are 110m x 160m, elongated in a N35E direction, with two larger stratiform granular silica breccia masses extending outward from the central area. The diatreme displays an elliptical section in plan as defined by the advanced argillic alteration envelope.

Diatreme fill consists of chaotically interbedded coarse and fine-grained phreatic breccias, volcaniclastic conglomerates, and very coarse volcaniclastic sandstone, dominated by coarse facies breccia (Figure 17). Coarse-grained breccia facies contain pebble to cobble size clasts (less than 20 cm) that are clast-supported with very little matrix and pervasively altered to granular silica or massive silica. Some breccia clasts found in the Central diatreme suggest a history of multiple brecciation events (Figure 18).

A stockwork veinlet zone of magnetite and molybdenite is exposed along a secondary drainage aligned east-west bisecting the Central Diatreme. Rock chip samples along this drainage returned very high values of molybdenum ranging from 500 to 1,764 ppm Mo; a select sample taken from a zone of magnetite veinlet stockwork contains molybdenum concentrations greater than 2.0 %.

Figure 17. Typical clast-supported, coarse-facies breccia with cobble-sized sub-angular to sub-rounded clasts, pervasively altered to granular silica; internal stratification lacking.

Figure 18. Rounded clast of breccia (left of pencil) indicates multiple brecciation events in the Central Diatreme.

7.4.7 North Vent/Diatreme

The North Vent is located in the northern sector of the Property within a northwest-trending zone of advanced argillic alteration measuring 500 meters long containing numerous silicified limonitic breccia bodies and a multi-stage silicified breccia complex. Stratified diatreme breccia in this vent contains silicified clasts with pyrite veinlets. The primary drill target is an area in the northern part of the zone marked by a strong resistivity anomaly where northeast-trending structures host silicified limonitic matrix breccias that contain up to 0.29 g/t Au.

7.4.8 Genetic Model for Mineralization, Lourdes Property

The high-sulfidation alteration and related mineralization found on the Property may have been formed in four stages:

1) An active hydrothermal system fueled by a developing porphyry Cu-Mo system at depth near the center of the Property resulted in high-sulfidation alteration across the Property at shallow levels featuring a central zone of silicic and advanced argillic alteration overlain by a layer of cryptocrystalline silica near the paleosurface.

2) Continued magmatic activity resulted in formation of diatremes and volcanic vents. Phreatic and phreatomagmatic brecciation of the silicified wall rock created breccia fill material comprised of comminuted siliceous wall rock resulting in sandy (granular silica) to coarse-

grained, stratified breccias with strongly silicified clasts, locally with quartz and quartz-pyrite veining.

3) Diatremes and vents provided conduits for ascending mineralizing fluids (Au-Ag-Cu) passing through already siliceous breccia matrices resulting in massive silica alteration of both breccia matrices and wall rock; granular silica alteration formed near the paleosurface in the vadose zone. Sulfide mineralization most likely precipitated preferentially along diatreme margins. Permeable volcanic units adjacent to the diatremes may also have received mineralizing fluids.

4) Hydrothermal breccias with high pyrite content followed structures through wall rock and diatreme margins.

8.0 DEPOSIT TYPES

8.1 High-sulfidation Epithermal Gold

The style of mineralization and wall rock alteration found on the Property is characteristic of the “high-sulfidation epithermal gold” model as defined in numerous publications including Corbett (2004), Corbett and Leach (1998), and Sillitoe (1993a) or the equivalent “epithermal quartz-alunite Au” model (Berger, 1986). Examples of these deposits in Peru include Yanacocha, Pierina and Julcani. The Lepanto (Phillipines) and Mulatos (Mexico) Cu-Au deposits are perhaps the closest analogies to the geology of the Property, described below.

High-sulfidation (HS) epithermal-gold deposits are typically found in linear magmatic arcs around the Pacific rim and are increasingly recognized as being associated with upper levels of a porphyry Cu systems (Sillitoe, 2010). The characteristic alteration associated with this type of deposit originates from magmatic volatiles that oxidize while rising to the surface thus creating highly acidic hydrothermal fluids that alter wall rock, usually a thick volcanic pile in the case of most occurrences of this type in Peru. Mineral deposition (Au-Ag) usually comes later than the alteration stage with higher metal grades found mostly in zones of strongest silicification, either by structural control (veins) or in permeable lithologies (disseminated deposits). Precipitation of Au-Ag from the ascending magmatic ore fluids is commonly caused by mixing with descending cooler, neutral meteoric water at higher levels in the hydrothermal system.

Most deposits of this type show strong structural control since conduits for the ascending magmatic fluids play an important role in alteration and mineralization. Before the discovery of disseminated Au mineralization at the Yanacocha and Pierina deposits in Peru, most explorationists believed that high-sulfidation gold deposits had limited tonnage potential since economic mineralization seemed restricted to controlling structures. Both of these discoveries showed that stratigraphic control can be more significant in terms of deposit size if ascending mineralizing fluids pass through a suitably permeable and voluminous host rock.

Diatreme structures are commonly found related to mineralized porphyry systems and high-sulfidation alteration (Figure 19). Tuff and breccia products of diatremes may provide favorable host rock to mineralization. These rocks are commonly subject to intense alteration which makes it difficult in the field to distinguish diatreme breccia fill from breccias originating by other means.

Diatreme breccias have a distinctive texture with centimeter-sized clasts supported by a matrix of finely comminuted wall rock, typically poorly lithified, friable and clay-rich resulting in subtle surface expression and recessive topography. Many diatremes are late-stage additions to porphyry Cu systems in which they commonly postdate and either cut or occur alongside porphyry Cu mineralization at depth, but overlap with high-sulfidation events at shallower epithermal levels. Diatremes may localize high-sulfidation Au mineralization (e.g., Wafi-Golpu, Papua New Guinea; Fig. 6) and in some cases where diatremes are early features (e.g., Grasberg, Galore Creek, and Boyongan Bayugo, Philippines; MacDonald and Arnold, 1994; Enns et al., 1995; Braxton et al., 2008) the diatreme breccia fill material provides a receptive host rock to the main alteration and mineralization of the porphyry Cu system.

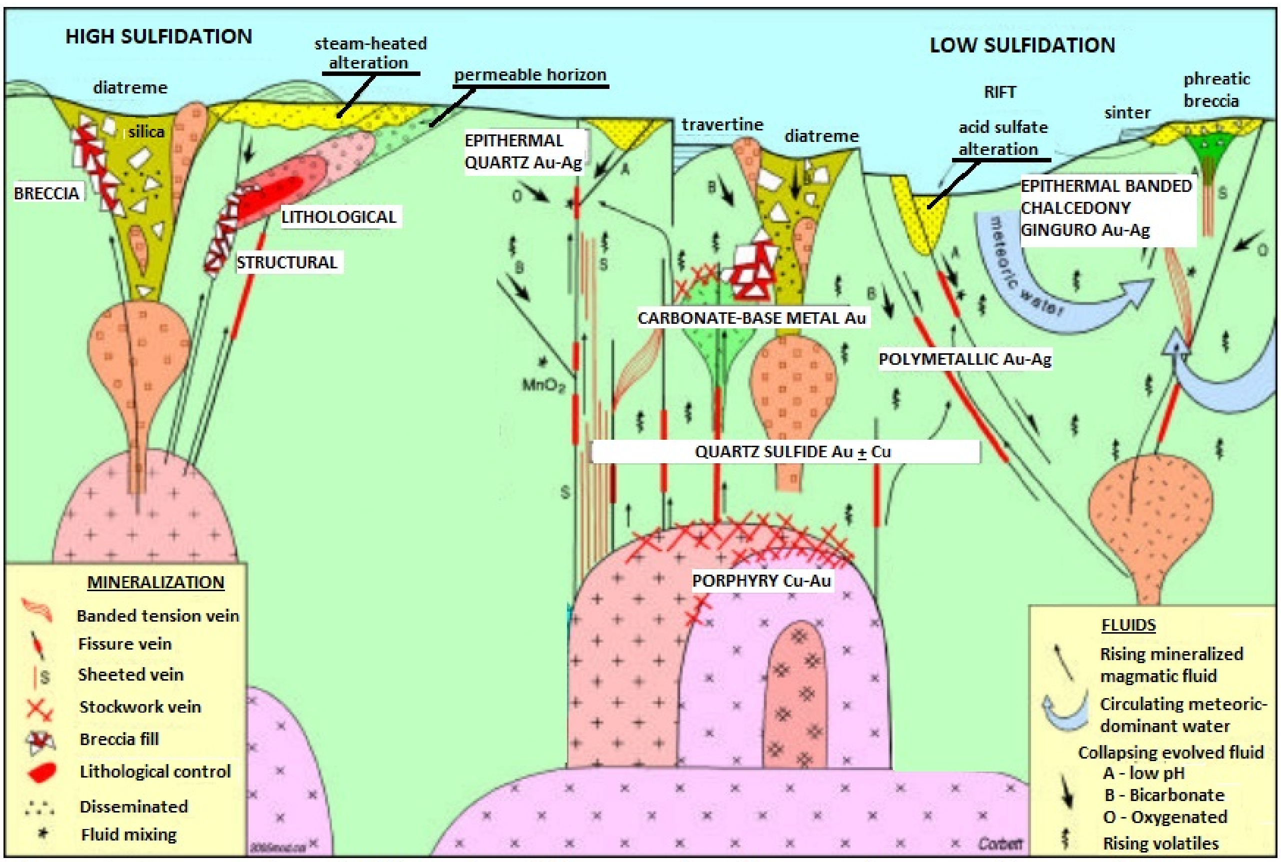

Figure 19. Conceptual model illustrating different styles of porphyry and epithermal Cu-Au-Ag-Mo mineralization (Corbett, 2008) with relationship to diatremes and phreatic breccias.

In a generalized model of alteration zonation, the advanced argillic alteration pattern associated with high-sulfidation hydrothermal systems – whether along narrow structures or in broader disseminated deposits – is centered on a vuggy silica zone that grades outward to quartz-alunite (± pyrophyllite at depth) and then quartz-alunite-kaolinite (Figure 20). Outward from the advanced argillic alteration is the argillic zone comprised of inter-layered clays (illite-smectite). Propylitic alteration is found on the periphery of the system represented by chlorite ± epidote ± calcite. Pyrite is present in all zones.

Gold deposition is generally a late stage in the evolution of a mineralizing hydrothermal system in the epithermal environment. Following the host rock alteration to quartz-alunite and then to vuggy silica, small amounts of gold are deposited along with pyrite (± enargite). Later mineralizing fluids oxidize pyrite, leach Cu, Zn, Se, Te, Tl and introduce significantly larger amounts of Au-Ag along with 'pathfinder' elements Hg, Pb, Bi, Sb and Ba.

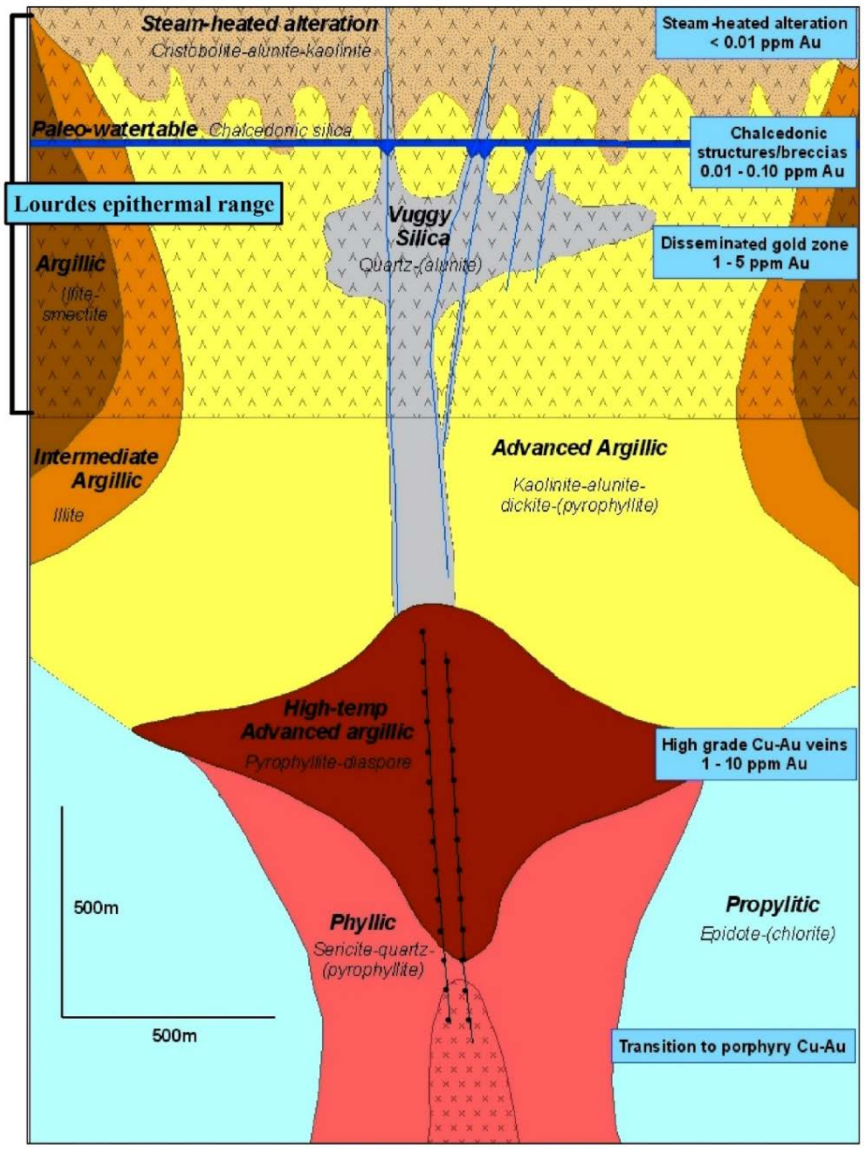

Figure 20. High-sulfidation epithermal gold model. Modified from Sillitoe (2010), Mirasol Resources (mirasolresources.com, 2012) and Ferrigno (2012).

The paleo-water table may be marked by the presence of tabular units of chalcedonic quartz as a result of silica crystallization at low temperatures. Steam-heated alteration is generally found in the zone above the paleo-water table characterized by fine grained, powdery cristobalite, alunite and kaolinite (Sillitoe, 2010). Hydrothermal alteration generally is accompanied by quartz as veinlets or silicification in the groundmass, whereas steam-heated alteration does not generate quartz veinlets, but instead is characterized by friable granular quartz plus alunite in the rock matrix.

Gold concentrations vary vertically from the top of a mineralized porphyry upward to the high-sulfidation epithermal zone. High-grade (1 – 10 g/t Au) mesothermal veins occur deep in the system; disseminated mineralization (1 – 5 g/t Au) in the epithermal zone is hosted in wall rock made permeable by advanced argillic alteration. Gold may be weakly anomalous in near-surface steam-heated alteration ranging from less than 1 to 10 ppb Au. Values of 10 to greater than 1,000 ppb Au may be expected below the paleo-water table. The exception to this generalized vertical zoning of gold grades at upper levels is found in sub-vertical structures providing a conduit for fluids to rise rapidly to the surface and carry gold in solution to higher levels to be deposited as fracture-filling veins.

Gold mineralization in Yanacocha is hosted in volcanic rocks with advanced argillic alteration (quartz + alunite + kaolinite ± pyrophyllite ± diaspore) with intense silicic alteration focused along numerous sub-vertical structures with cores of massive silica enveloped by vuggy silica (Figure 21). This alteration is capped by granular silica alteration interpreted to represent near-surface, vapor-dominated horizons. Broader occurrences of advanced argillic alteration form lateral and vertically zoned alteration assemblages around massive quartz-dominant replacement cores (Teal and Benavides, 2010).

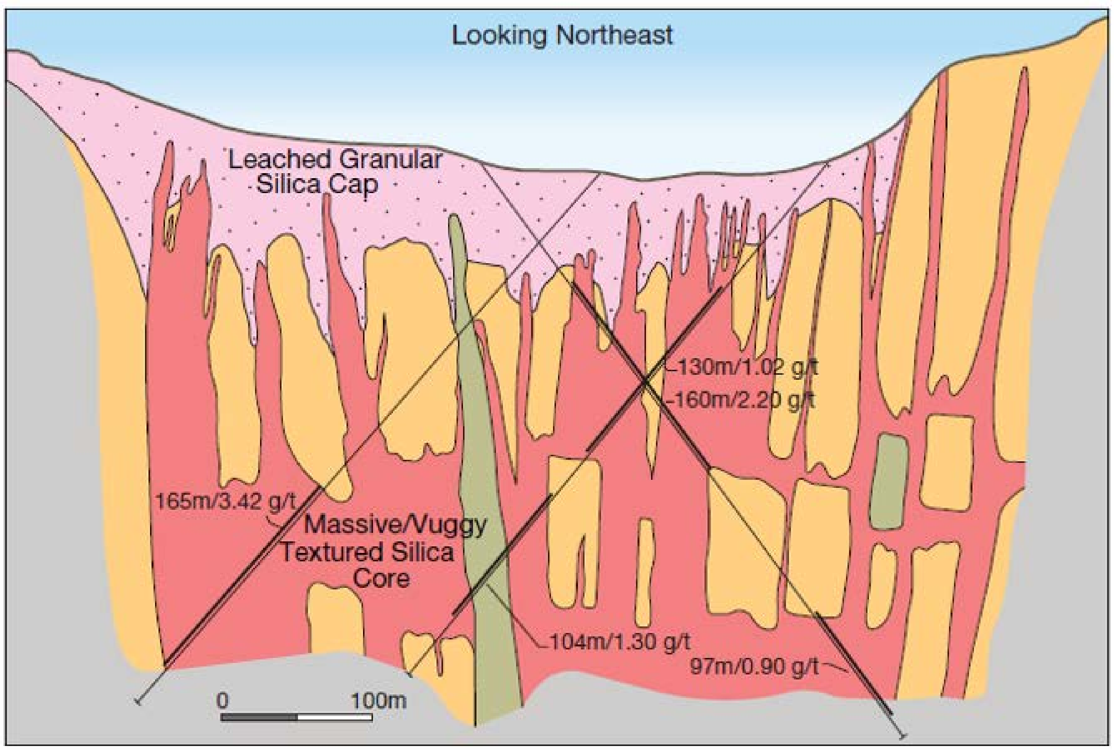

Figure 21. Cross section through the Chaquicocha Sur deposit, Yanacocha illustrating numerous gold-bearing sub-vertical massive/vuggy silica structures capped by granular silica (Teal and Benavides, 2010).

A characteristic geophysical signature of a HS epithermal-gold deposit would necessarily depend on the geometry of the deposit, whether the deposit is defined by structural control resulting in narrow ledges of mineralization or by stratigraphic control yielding disseminated bodies. In general, the core zone of the alteration is recognized by high resistivity due to the strong silicic alteration and low magnetic susceptibility due to destruction of ferromagnesian minerals. Interpretation of resistivity response must take into consideration the elevation of the water table since even a strongly silicified rock unit that is saturated with ground water having a high content of total dissolved solids will give a low resistivity response.

Chargeability must be interpreted in conjunction with resistivity and magnetics since positive anomalies can be produced by graphite, clay and sulfide minerals. Precious-metal mineralization in the upper levels of a system may be represented by a chargeability low where all sulfide minerals have been oxidized, whereas Au-Ag mineralization below the oxidation level may be represented by chargeability highs due to association with pyrite. However, since pyrite is nearly ubiquitous in high-sulfidation alteration, the presence of pyrite more reliably indicates strength of alteration rather than abundance of Au-Ag mineralization.

Geology of the Mulatos Mine in Sonora, Mexico (50Mt @ 1.17 g/t Au, 1.885M oz Au, P+P Mineral Reserves, Alamos Gold Inc News Release Feb 23, 2017), is closely analogous to the alteration and mineralization found on the Property. Gold mineralization at Mulatos is associated with silicic and advanced argillic alteration near the upper contact of a rhyodacite porphyry with overlying dacite and volcaniclastic rocks. An inner zone of vuggy silica hosts most of the gold ore, enveloped in a zone of gold-bearing pyrophyllite-dickite advanced argillic alteration. Three stages of mineralization are recognized, from oldest to youngest: 1) quartz-pyrite-pyrophyllite-gold; 2) quartz-pyrite-kaolinite-gold-enargite; 3) kaolinite-barite-gold (Staude, 2001). Subsequent supergene oxidation and remobilization of gold have slightly modified the mineral zonation.

The Caspiche porphyry deposit in the Maricunga Au-Ag-Cu belt of northern Chile is a telescoped system with Cu-Au mineralization hosted in part in diatreme breccia as well as in a diorite porphyry stock (Sillitoe et al, 2013). At Lepanto, Philippines, the host dacite volcanic unit flares upward in cross section suggesting origins as a diatreme vent (Hedenquist and Arribas, 1998). Mineralization at the Peñasquito Mine (Mexico) fills a diatreme structure over a vertical range of more than 800 meters with disseminated Cu-Au-Ag-Mo (Belanger et al, 2010). In Peru, major high-sulfidation, Cu-Au deposits feature diatremes prominently in their geology (Yanacocha, Cerro de Pasco, and San Gabriel prospect).

8.2 Porphyry Copper (Au-Mo)

Porphyry copper deposits are defined by the following characteristics and conditions (Berger et al, 2008):

- Cu-bearing sulfide minerals localized in fracture-controlled stockwork veinlets and as disseminated grains in the adjacent altered rock matrix;

- Alteration and ore mineralization at 1 – 4 km depth genetically related to magma reservoirs emplaced into the shallow crust (6 – 8+ km), predominantly intermediate to silicic composition in magmatic arcs above subduction zones;

- Intrusive rock complexes emplaced immediately before porphyry deposit formation;

- Mineral deposits are predominantly in the form of vertical cylindrical stocks and/or complexes of dikes;

- Zones of phyllic-argillic and marginal propylitic alteration overlap or surround a potassic alteration assemblage; and

- Copper may also be introduced during overprinting phyllic-argillic alteration events.

Porphyry copper deposits have been divided into three subclasses: 1) copper, 2) copper-gold-molybdenum, and 3) copper-molybdenum based on the deposit's gold to molybdenum ratio (Cox and Singer, 1988). Porphyry copper-gold-molybdenum deposits are considered as those having a Au:Mo ratio greater than 3 but less than 30. Sillitoe (1993b) states that high gold content in porphyry deposits is not directly related to tectonic setting, host-rock composition, wall-rock composition, deposit age, level of erosion, ore body size, nor presence of phyllic alteration. However, gold-rich porphyries generally occur in calc-alkaline intrusive complexes and have a greater magnetite content than non-gold-rich types.

8.3 Applicable Ore Deposit Models to Lourdes Property

The styles of mineralization and wall rock alteration found on the Property and described in detail in Section 7.4 are characteristic of both the high-sulfidation epithermal gold deposit type and the porphyry copper-gold-molybdenum deposit type. As described in the previous sections, both of these deposit types are represented by numerous world-class mineral deposits.

9.0 EXPLORATION

EPZ began surface exploration in 2010 by collecting rock chip samples, mapping primary targets in detail and completing an IP-ground magnetic geophysical survey in 2012. Pucara continued mapping and sampling work from 2013 through 2019. A combined total of 3,859 geochemical samples have been collected by EPZ and Pucara.

Exploration work carried out on the Property by both EPZ and Pucara to date has included:

- TM satellite imagery evaluation (regional) – EPZ
- Rock chip sampling (480 samples) – EPZ
- Geologic mapping at 1:10,000 scale – EPZ
- Geophysical surveys: IP (56 line-kms) and ground magnetometry (70 line-kms) – EPZ
- WorldVeiw-3 satellite Imagery (property) – Pucara
- OreXpress™ spectrometer data collection and interpretation (559 sites) – Pucara
- Petrography sample analysis (6 samples) – Pucara
- Rock chip sampling (2,609 samples); soil grid sampling (713 samples); stream sediment sampling (57 samples) – Pucara
- Geologic mapping at 1:2,000 scale – Pucara

9.1 Rock Chip Sampling

Rock chip samples were collected by Pucara from outcrop. Size and form of sample were determined by the field geologist based on the form of the outcrop, orientation of jointing, bedding, or fracturing and orientation of mineralized structures.

The majority of the samples collected to date on the Property were taken as panel chip samples or channel chip samples. Panel chip samples are non-continuous chips from inside a square area of outcrop, usually measuring 2m x 2m, where mineralization and alteration are disseminated throughout the outcrop. Mineralized structures were sampled by channel chip samples oriented perpendicular to both the strike and dip of the structure where possible. Channel chip sampling implies that sampling was not necessarily continuous along the length of the channel.

Approximately 2 kg of rock chips were collected from each sample location, bagged in sturdy plastic sample bags that were tagged, securely tied and closed in the field.

Gold assays in rock chip samples were obtained by fire assay with an atomic absorption finish. A suite of 38 additional elements were assayed by inductively coupled plasma (ICP-ES). (See Section 11.0 - Sample Preparation, Analysis and Security.)

In the authors' opinion, methods and procedures used by Pucara for its rock chip sampling program were adequate and representative of each area in preparation for orienting a drilling program. Samples are amply spaced out across each respective area with sufficient density on mineralized structures.

9.2 Soil Sampling

Soil samples were collected on a 100m by 100m grid pattern across the Property with local deviations required to conform to rock outcrops. Each sample was taken from immediately below the organic soil horizon (A) from a shallow pit 20 to 30 cm below surface and sieved on site to -2mm mesh. Approximately 0.5 kg of sample was collected at each grid point.

Laboratory analysis of the soil samples followed the same procedure as rock chip samples. Gold assays were obtained by fire assay with an atomic absorption finish. A suite of 38 additional elements were assayed by inductively coupled plasma (ICP-ES). (See Section 11.0 - Sample Preparation, Analysis and Security.)

9.3 Geochemical Surface Sampling Results

Gold, copper and molybdenum geochemical anomalies from rock chip and soil samples indicate structural control of mineralization across the width of the Property and, in some cases, stronger geochemical anomalies where controlling structures intersect the centers of mapped diatreme and vent structures. Several gold anomalies from rock chip sampling are aligned along the NE-trending Chucllani structural trend and also hosted in silicified diatreme breccia found in the center of the Cascada Diatreme. Molybdenum is shown to be especially strong in rock chip samples across a broad area in the central and western sectors of the Property where it occurs as a significant linear anomaly through the Central Diatreme and with highly anomalous values in most all diatreme centers (Figure 22).

Soil samples reflect the rock chip anomalies and also define geochemical dispersion halos of Zn-(Pb) around Au-Cu-Mo anomalies, especially evident around the North Vent. Somewhat larger and less well-defined halos of Zn can be interpreted around the Paccha Huayco, Ayani, and Jellopata centers. An apparently related linear Zn anomaly runs peripheral to the strong Au-Cu-Mo rock chip and soil anomaly in the center of the Cascada Diatreme. The eastern outcrops in the Ayani Vent that show modest to strong anomalies in multiple elements are rimmed by elevated Zn values in soil.

9.3.1 Cascada Diatreme and Chucllani Structural Trend

A strong Au-Cu-Mo anomaly is located in the center of the Cascada Diatreme hosted in silicified diatreme breccias. Gold values range up to 0.578 g/t Au; multiple samples reported greater than 500 ppm Cu and greater than 1,000 ppm Mo. Arsenic values are also elevated in this zone to 3,900 ppm As.

A series of sub-parallel channel samples returned highly anomalous gold values taken on outcrop of strongly silicified breccia located near the trace of the Chucllani structural trend in the central sector of the Cascada Diatreme in an area measuring roughly 80m x 30m at 618780E, 8363220N (Figure 23). The most significant of these channel samples returned:

- 28m @ 0.15 g/t Au
- 14m @ 0.31 g/t Au
- 24m @ 0.22 g/t Au
- 20m @ 0.24 g/t Au including 8m @ 0.35 g/t Au
- 16m @ 0.29 g/t Au including 8m @ 0.36 g/t Au

.

Gold anomalies located along the NE trend from Cascada to Chucllani centers mark the extrapolated intersections of the NW-trending fold axes with the NE-trending Chucllani structural trend. The intersection of NW and NE structures on the eastern edge of the Ayani Vent, possibly an extension of the Chucllani structural trend, are coincident with a strong As-Ba-Hg-Mo-Sb anomaly. The entire area of outcropping breccia is outlined by elevated Zn-(Pb) in soil.

The Au-Cu-Mo anomaly in the Cascada Diatreme is especially well aligned with the axial plane of the westernmost fold axis that also runs through the North Vent.

A linear anomaly of Au-Cu extends south of Cascada Diatreme on the same NNW trend connecting Cascada/Central diatremes with North Diatreme along the limits of a suspected landslide block. A linear zinc soil anomaly trending NNE, possibly along a structure, is peripheral to the mapped margin of the Cascada Diatreme with this Au-Cu-Mo anomaly.

Channel sampling in the southwest sector of the Chucllani Vent near the trace of the Chucllani structural trend returned highly anomalous gold values (Figure 24):

- 4m @ 0.37 g/t Au
- 8m @ 0.25 g/t Au
- 16m @ 0.22 g/t Au
- 18m @ 0.18 g/t Au

Channel sampling in the northeast sector of the Chucllani Vent that continued along the trace of the Chucllani structural trend returned one highly anomalous composite channel sample of 14m @ 0.49 g/t Au including the highest gold value from a single channel sample (2 meter length) of 1.2 g/t Au (Figure 25).

9.3.2 Jellopata and Central Diatremes

The Jellopata Diatreme contains modest geochemical anomalies in rock chips of Cu, Bi, Hg, and Mo. Most rock chip samples were collected in the northern sector of the diatreme and along its eastern rim due to the pattern of outcrop available for sampling. A strong Cu-Mo anomaly of three rock chip samples with greater than 300 ppm Mo is located on the eastern rim. Soil sampling defines a Cu-Te anomaly through the center of the diatreme. A probable structure related to the diatreme trending NNE off the northern end carries anomalous Cu-Bi-Hg values in rocks.

The Central Diatreme hosts a strong, linear molybdenum anomaly in rock chip samples that extends roughly east-west along the axis of the diatreme elliptical form. Eight samples along this trend reported greater than 300 ppm Mo with associated Zn-(Pb). One of these is a select sample collected from a zone of magnetite stockwork veining that yielded 2% Mo.

Rock chip samples from the Central Diatreme returned very high values of molybdenum along a line of samples extending east-west on the long axis of the diatreme. These samples ranged from 500 to 1,764 ppm Mo, not including a select sample taken from a zone of magnetite veinlet stockwork that returned greater than 2.0 % Mo. Anomalous Zn and Pb values accompany these high Mo values.

9.3.3 North Vent

Rock chip samples from the North Vent yielded up to 0.29 g/t Au with moderately anomalous values of silver and arsenic. Mercury reported a strong anomaly in this zone with numerous samples yielding greater than 20 ppm Hg. Strong molybdenum values (300 – 400 ppm Mo) were also found in this zone similar to Cascada Diatreme. Zinc in soil samples forms a well-defined dispersion halo around the North Vent.

Rock chip geochemical maps for Au plus As, Cu, Hg, and Mo are presented in Appendix A paired with corresponding soil geochemical maps.

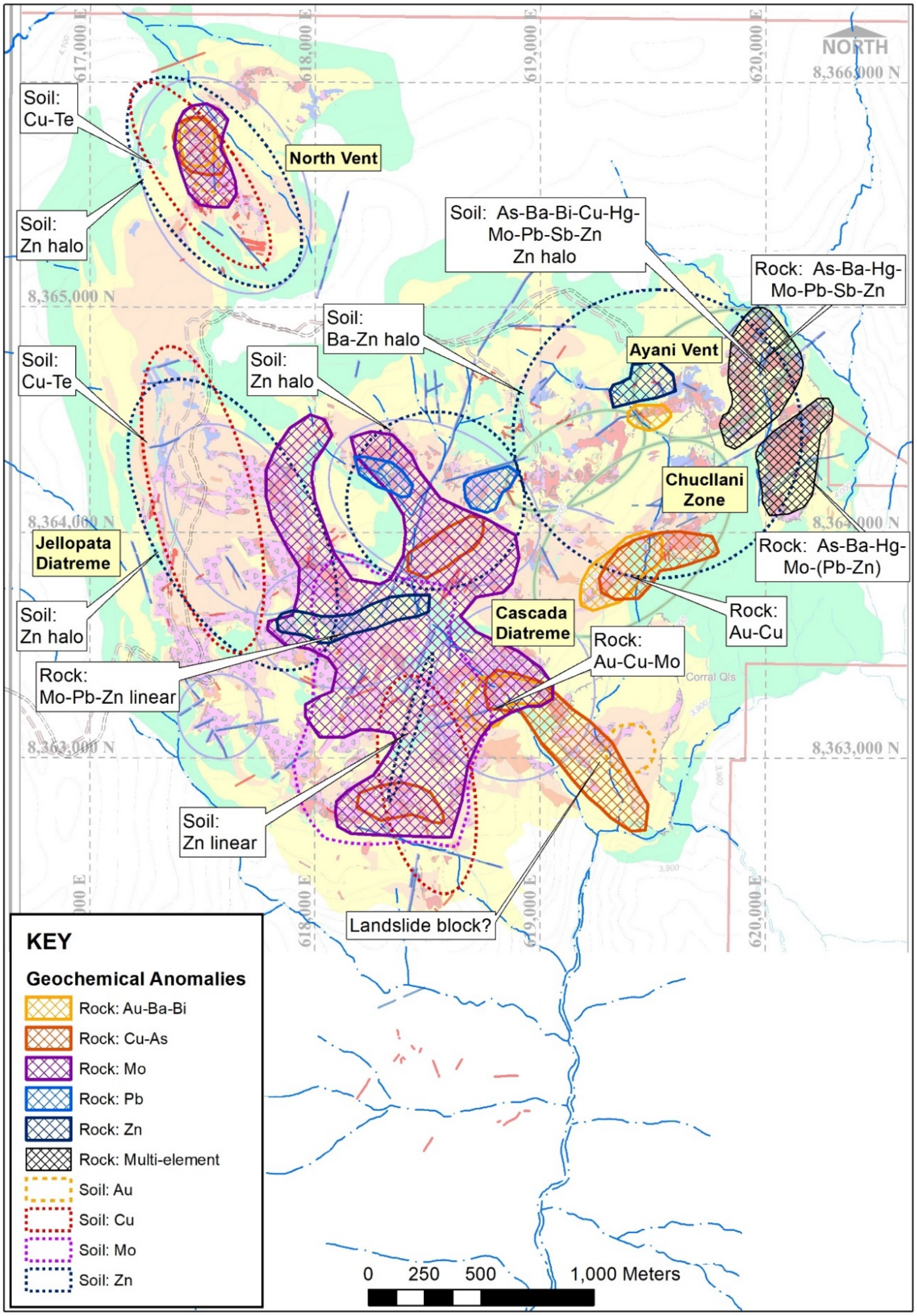

Figure 22. Outlines of rock and soil geochemical anomalies in relation to recognized diatreme and vent structures. From Pucara geochemical surveys, 2013 – 2019.

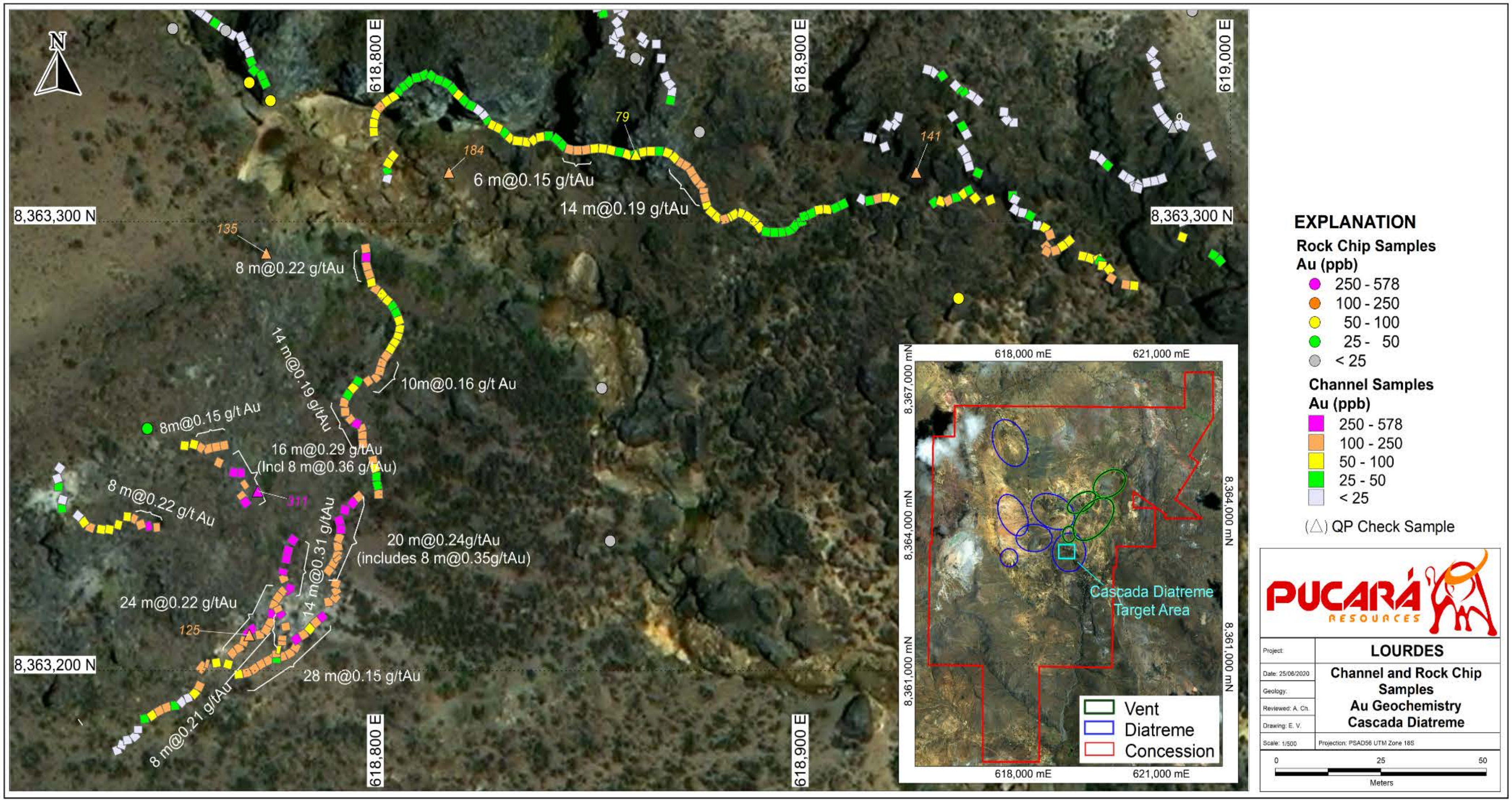

Figure 23. Rock chip and channel samples, central sector of the Cascada Diatreme.

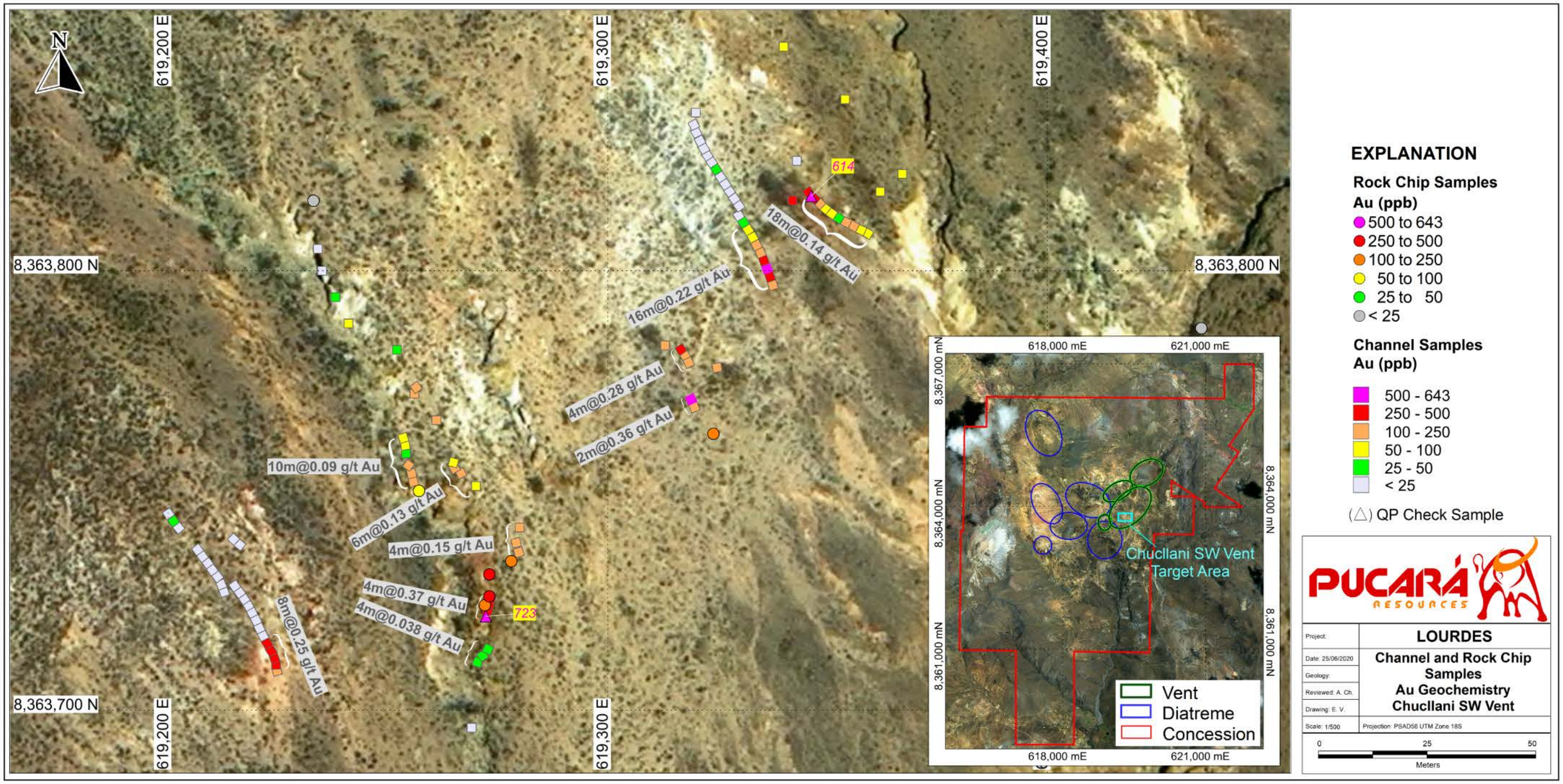

Figure 24. Rock chip and channel samples, Chucllani vent, southwest sector.

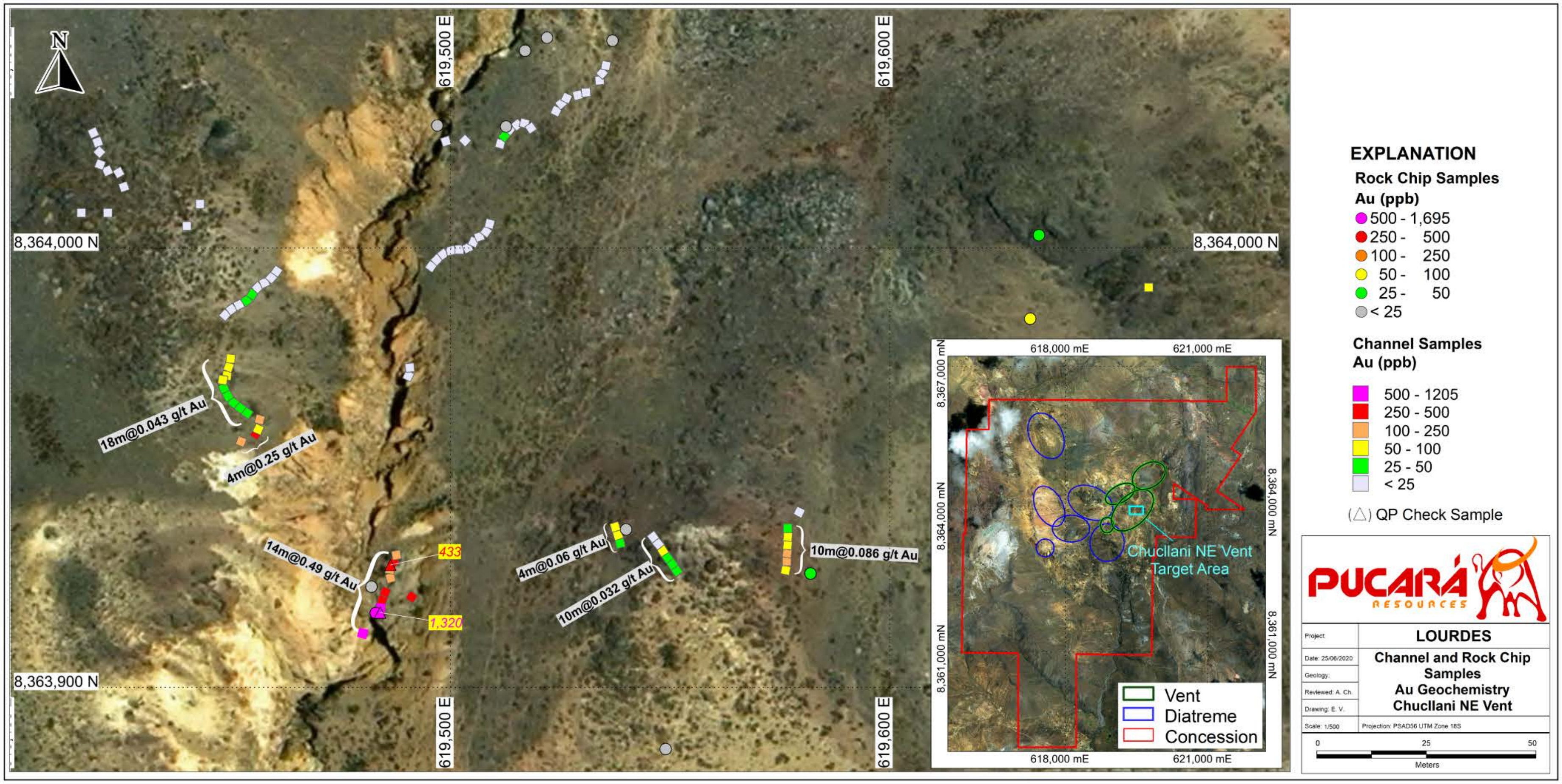

Figure 25. Rock chip and channel samples, Chucllani vent, northeast sector.

9.4 Geophysical Survey

9.4.1 Geophysical Survey Methods

A geophysical survey was completed on the property by Arce Geofisicos on behalf of EPZ in April 2012 (Arce, 2012). Pole-pole induced polarization (IP) and spontaneous potential (SP) surveys were extended along 56 line-kilometers; a ground magnetic survey covered 70 line-km. The IP and SP surveys consisted of 20 lines spaced at 200 meters, with pole spacing at 50 meters. The ground magnetic survey tracked along 26 lines with station spacing at 50 meters. Both survey grids were situated over identified alteration zones to define the existence of resistive, conductive, and magnetic bodies at depth

The E-W orientation of the survey lines was chosen to run perpendicular to the N-S orientation of the structural grain of this zone, defined primarily by the strike of the volcanic stratigraphy as discussed above, which asserted local control over the advanced argillic alteration, and roughly perpendicular to silicified/mineralized structures trending NE.

The survey's east-west line orientation was not ideal for the magnetic survey since at low latitudes the magnetic field intensity is small and the ambient inducing field direction is nearly parallel to the ground surface resulting in small anomalies that are artificially expanded in an E-W direction. Filters such as reduced-to-pole help to enhance magnetic data collected at low latitudes (Beard, 2000). As noted below, Arce Geofisicos used the reduced-to-pole filter in processing the magnetic data.

The ground magnetic survey was completed using two Scintrex ENVI proton precession magnetometers, one for measuring along the survey grid and the other serving as a base station to correct for diurnal effects. Readings along each survey line were recorded every 10 meters.

The IP survey covered 50.45 line-km of the established survey grid. The IP survey was configured as a pole-pole array with seven intervals of progressive penetration where the spacing parameter **a** = 50m, 100m, 150m, 200m, 250m, 300m, and 350m. Electrical current was controlled with an Iris VIP4000 transmitter powered by a 6.5kW generator.

The magnetic survey results were presented in a map set at a scale of 1:5,000 including total field, reduced-to-pole magnetic intensity and total field, analytical signal of the vertical integration (ASVI). The set also includes a series of magnetic susceptibility maps interpreted at eight depth levels from 20m to 400m.

The IP survey results were presented in a series of maps (1:5,000 scale) of resistivity and chargeability modeling at seven depth levels from 25m to 325m, plus one of self-potential contours. Each survey line is represented by a section of 3D modeling for resistivity and chargeability, a total of 20 sections oriented east-west across the survey grid. (See Appendix B for location of geophysical lines.)

9.4.2 Geophysical Survey Results

The geophysical survey identified resistivity, chargeability and magnetic anomalies in the central sector of the Property and resistivity-chargeability anomalies coincident with the breccia complex outcrop in the North Diatreme. A northwest-trending magnetic low anomaly underlies a possible mineralization conduit along the Ayani structural trend.

Large, coincident resistivity and chargeability anomalies underlie advanced argillic alteration centered under the ridge top through the Jellopata Diatreme extending over one kilometer of strike length and over 300m in depth. The resistivity anomaly is formed by three lobes with N-S breaks, possibly due to post-alteration faulting creating conductive planes as vertical zones of permeability. The resistivity anomaly is T-shaped in section suggesting both stratigraphic and structural control of alteration (Figure 23), although the presence of acidic groundwater high in total dissolved solids may distort the resistivity anomaly by showing an abrupt termination of the resistivity anomaly over a short vertical extent as shown in cross sections through the North Vent (Figure 24). An extensive area of springs in the North Vent indicates that the water table is near the surface and that breccia in the zone may serve as an aquifer.
An extensive chargeability anomaly labelled An.1300/L2800 (station point 1300 on survey line number 2800), underlies the Jellopata resistivity anomaly extending more than 1,000 meters along a northerly axis, and is especially strong in the area of stockwork magnetite veinlets. In lines L2800 and L2600 this anomaly appears to have 'roots' that extend below the level of the IP section (Figure 25).

A blind, tabular chargeability anomaly, An.900/L3200, is located 400 meters west of An.1300/L2800 on the eastern margin of the Jellopata Diatreme extending 500 meters along a northerly axis (Figure 26). On lines L3000 and L3200 the top of the anomaly reaches within 100 meters of the surface and may be related to near-surface, small chargeability responses.

A distinct concave-upward zone of anomalous low chargeability through Jellopata Diatreme is present within the northern 600-800 meters of the resistivity anomaly, interpreted as a zone of strong oxidation extending to 200 meters below the surface. This area is believed to be the most prospective for gold mineralization due to deep oxidation commonly found where brecciation created zones of high porosity and permeability.

Magnetic low anomalies are found coincident with the southeast sector of the broad chargeability anomaly through Cascada and Central Diatremes. A northwest-trending magnetic low anomaly in the Ayani Vent appears related to anomalous Au values and pathfinder elements (As, Sb, Hg, Ba) in rock chips but has no spatial relation to resistivity or chargeability geophysical anomalies.

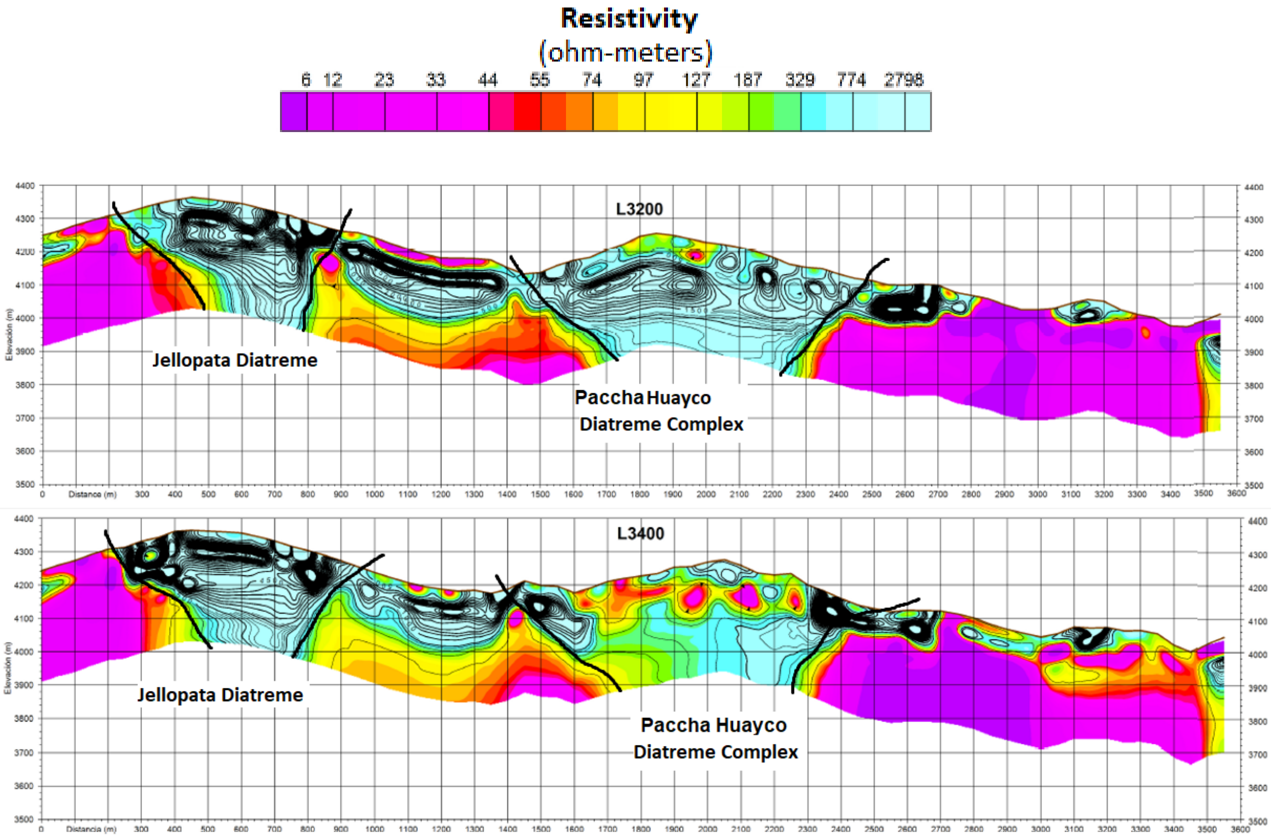

Figure 26. Resistivity sections, lines 3200 and 3400 through Jellopata and Paccha Huayco diatremes.

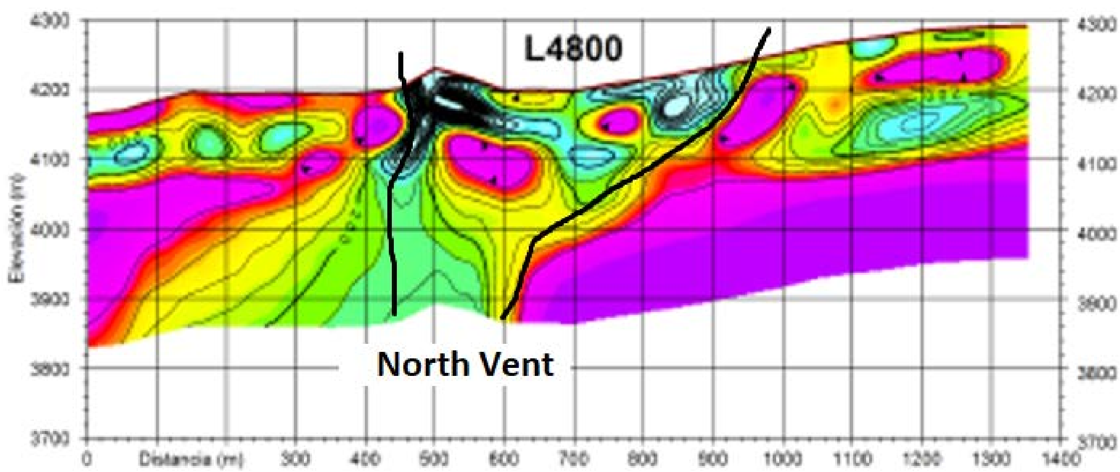

Figure 27. Resistivity section from North Vent through inferred diatreme. Relatively low resistivity in the inferred vent structure may be due to the presence of conductive acid groundwater detected in the area.

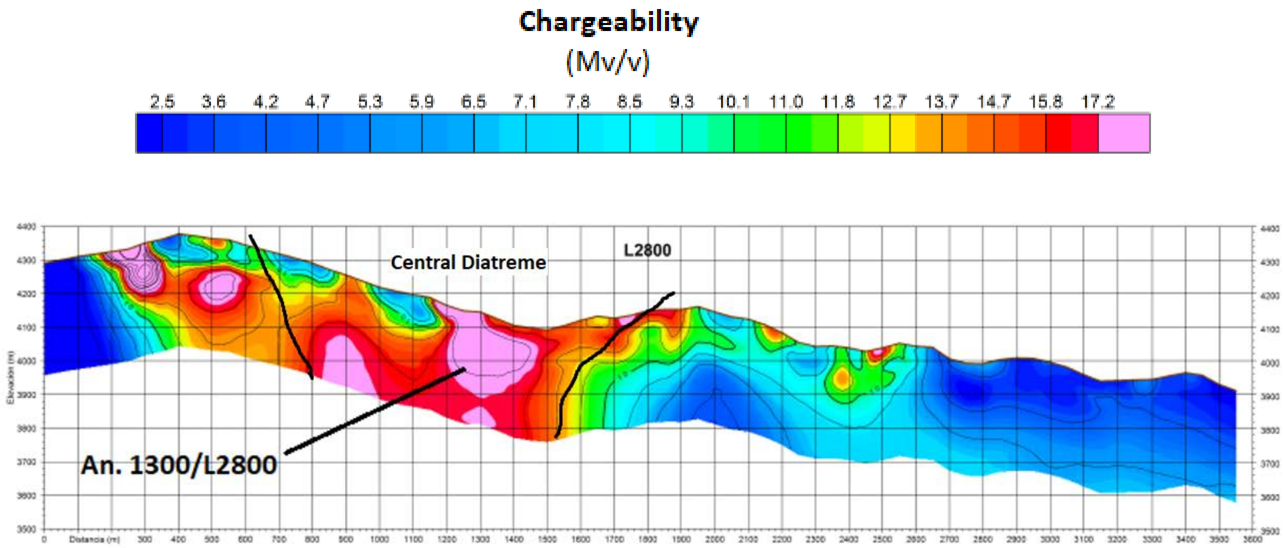

Figure 28. Chargeability anomaly extends over 1,000m along a northerly axis from L2400 to L3400, locally associated with magnetite stockwork outcrops.

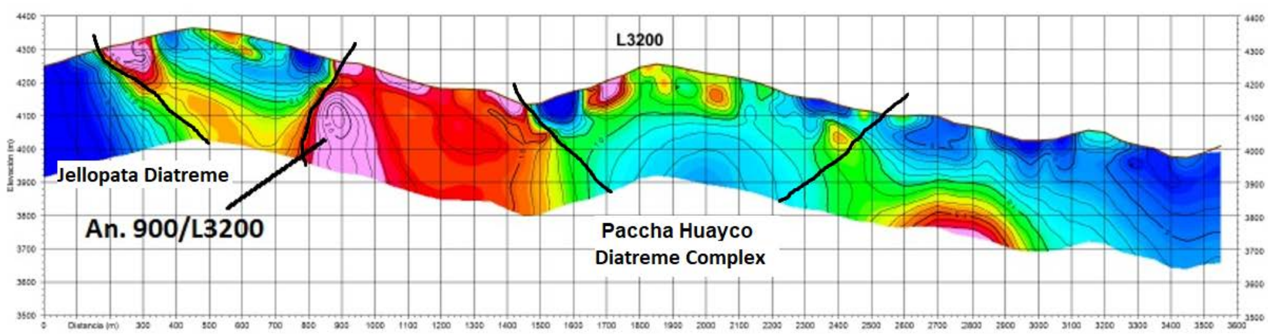

Figure 29. A blind, tabular chargeability anomaly extends over 800m along a northerly axis from L2600 to L3400, apparently localized along the margin of the diatreme.

The spatial relationship between the geophysical and geochemical anomalies is illustrated in Figure 27. Anomalous gold and copper values are associated with chargeability and resistivity anomalies; trace elements Hg, Sb, Ba where not associated with Au-Cu are found distal to the geophysical anomalies.

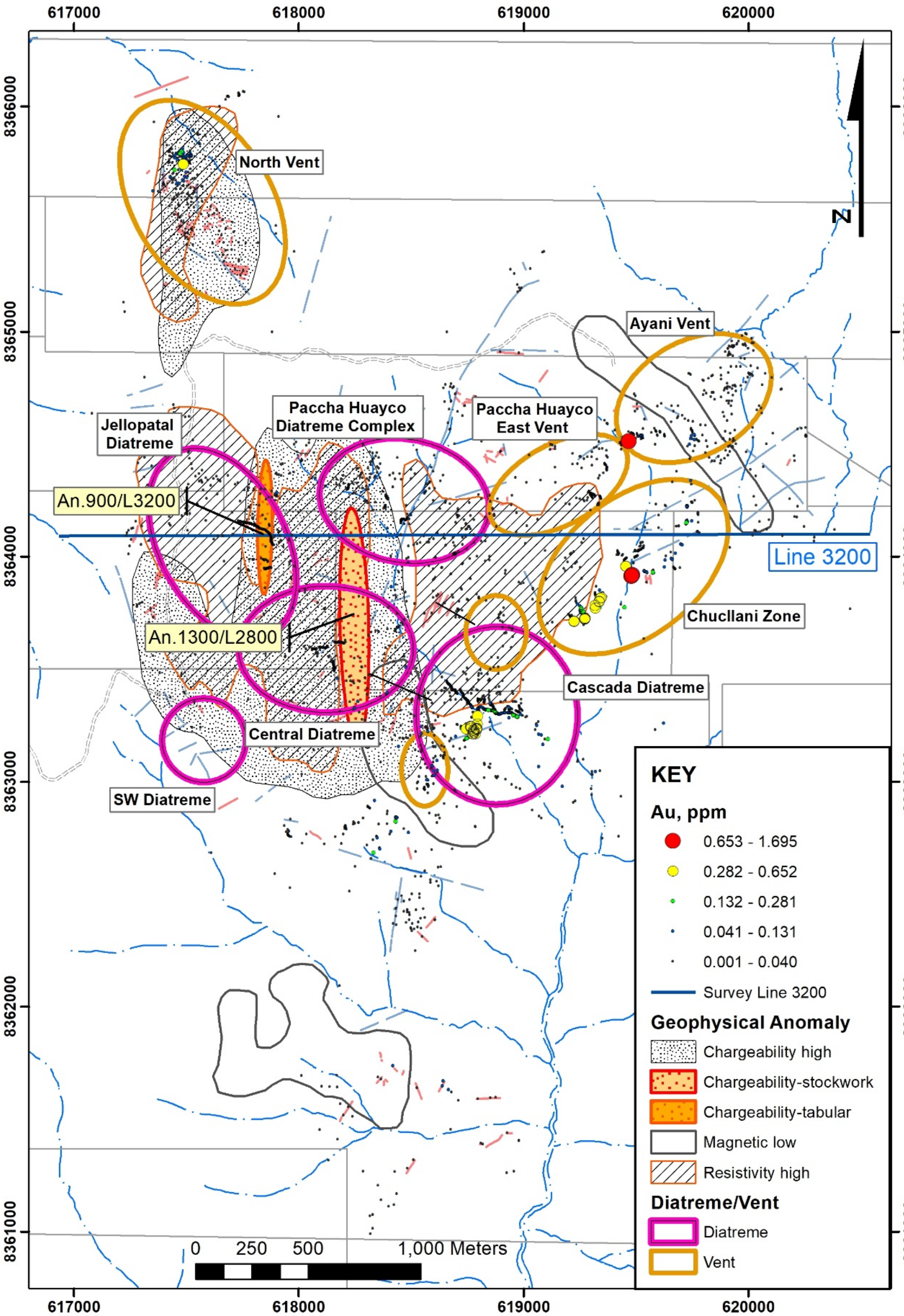

Figure 30. Geophysical anomalies in relation to Au geochemistry in rock chip samples including locations of chargeability anomalies 900/L3200 and 1300/L2800 as shown in cross section, Figures 25 and 26.

9.5 Reflectance Spectroscopy

9.5.1 Reflectance Spectroscopy Methods

A total of 559 samples from rock outcrop were analyzed using an OreXpress™ Spectrometer to identify clay minerals on the Property with the objective of providing finer detail to mapping hydrothermal alteration. Measurements were conducted and interpreted at Pucara's office in Lima. A preliminary interpretation of alteration grade was based on point plots of primary and secondary alteration minerals that indicate temperature of formation of common alteration mineral suites with the objective of defining a vector toward feeder structures that acted as conduits for mineralizing hydrothermal fluids.

Perry Remote Sensing (PRS) contacted Pucara in October 2014 with a proposal to use the Lourdes property to "ground-truth" the then new WorldView-3 satellite's spectrometer. In exchange, PRS provided visible and near-infrared (VNIR) and short-wave infrared (SWIR) imagery data to Pucara for use in mapping and exploration of the Property (Perry, 2015)

9.5.2 Reflectance Spectroscopy Results

9.5.2.1 PIMA Surface Sample Survey

Samples from rock outcrops in the central sector are shown to be altered to both high- and moderate-temperature suites of advanced argillic alteration minerals using pyrophyllite as an indicator mineral for high-temperature alteration (pyrophyllite may be formed at low temperatures where the concentration of silica is greater than solubility of quartz [Hedenquist, 2000]).

Zonation of alteration is evident across the Jellopata Diatreme where the diatreme center shows predominantly silica and quartz-pyrophyllite (high-temperature assemblage) grading outward into quartz-(Na) alunite and quartz-(K) alunite (low-temperature assemblages). The same pattern of zonation occurs in the North Vent, although with relatively less pyrophyllite. The highest Au anomalies in the North Vent coincide with the higher temperature alteration suite at the northern end of the outcrop (Figure 28).

The small sample grid in the northeastern sector of the Property north of the Paccha Huayco complex defines a zone of predominantly quartz-(K) alunite with a weak halo of kaolinite-dickite and quartz-kaolinite that may be interpreted as peripheral zones of alteration to the diatreme centers to the south. The limited spectroscopy sample grid did not extend further south since these diatremes were not recognized at the time of the sample survey.

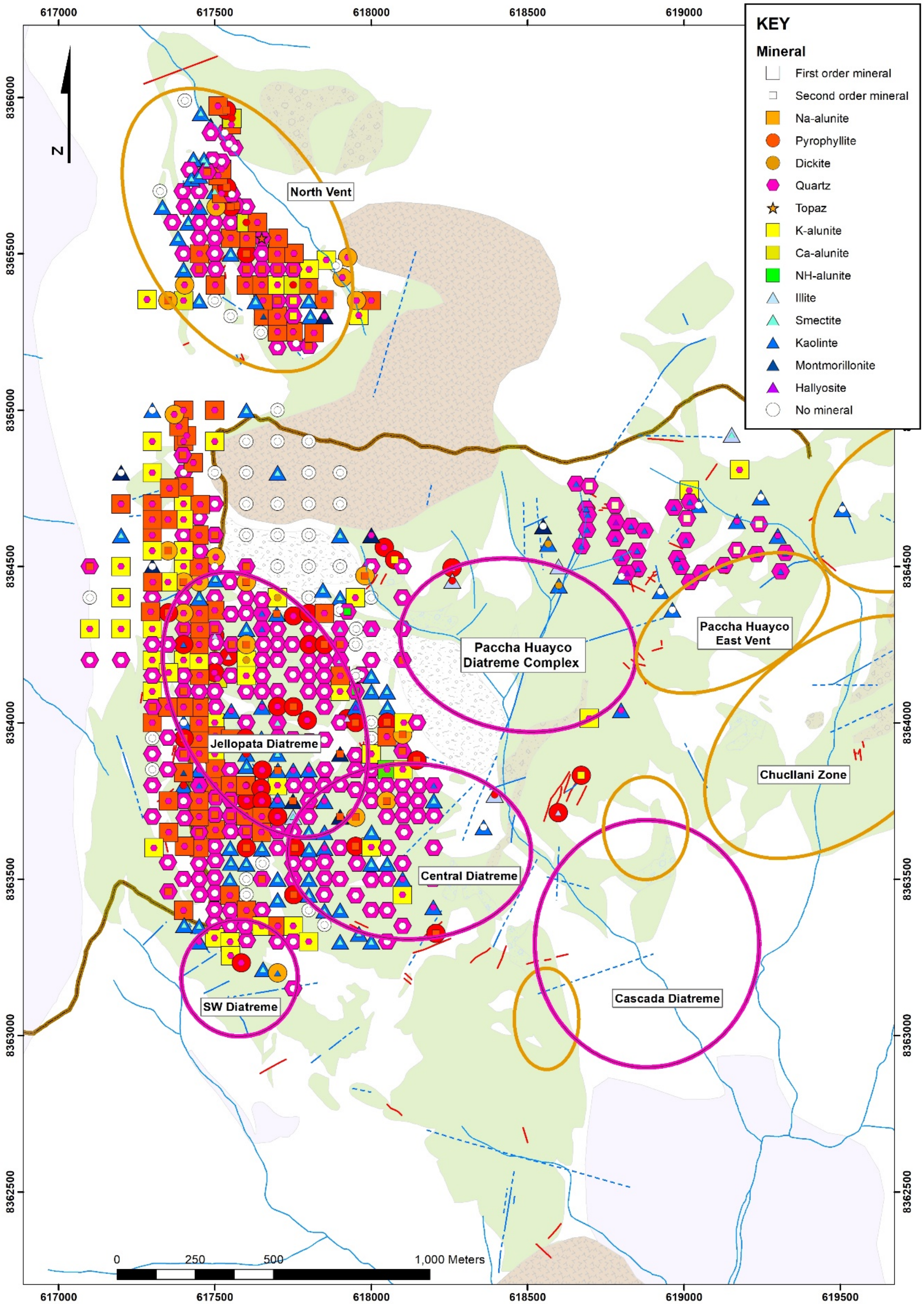

Figure 31. Reflectance spectroscopy, primary and secondary minerals. Pucara survey with OreXpress™ Spectrometer, 2017.

9.5.2.2 SWIR and VNIR Satellite Imagery

Short-wave infrared (SWIR) and very near-infrared (VNIR) satellite imagery provided coverage of the entire Property and corroborated results from the ground spectroscopy sample grids. The more expansive coverage from satellite imagery reveals a general zonation of alteration minerals from high-temperature pyrophyllite in the central sector of the Property to lower temperature assemblages of kaolinite-montmorillonite-smectite on the margins of the Central and Northeast zones. Within the central sector are two ‘sub-centers’ of high-temperature alteration mineral suites in the Jellopata-Central diatremes and also immediately north of the Paccha Huayco East vent complex.

One of these ‘sub-centers’ is defined by a mineral suite of pyrophyllite-alunite-hematite that forms of a narrow linear trend oriented west-northwest through the center of the Jellopata Diatreme and which continues to the southeast along the northern margin of the Central Diatreme (Figures 29 and 30), most likely highlighting structural grain in that area otherwise not recognized. The other ‘sub-center’ of high-temperature alteration minerals is an occurrence of pyrophyllite-alunite-hematite immediately north of the Paccha Huayco East complex forming a more rounded pattern but also influenced by an apparent west-northwest structural grain. Interestingly, a magnetic low geophysical anomaly neatly marks the northeast boundary of the alteration mineral pattern in the image suggesting the margins of a porphyry system.

The SWIR image of FeOx – clays (hematite + jarosite) shows a very large response from hematite associated with the Jellopata Diatreme and coincident with the western sectors of the chargeability and resistivity geophysical anomalies. Zones of jarosite are shown peripheral to the main hematite feature.

The North Vent breccia complex has a low density response in SWIR, although it does mimic the response of quartz-pyrophyllite-alunite zoning from north to south as shown in the ground survey.

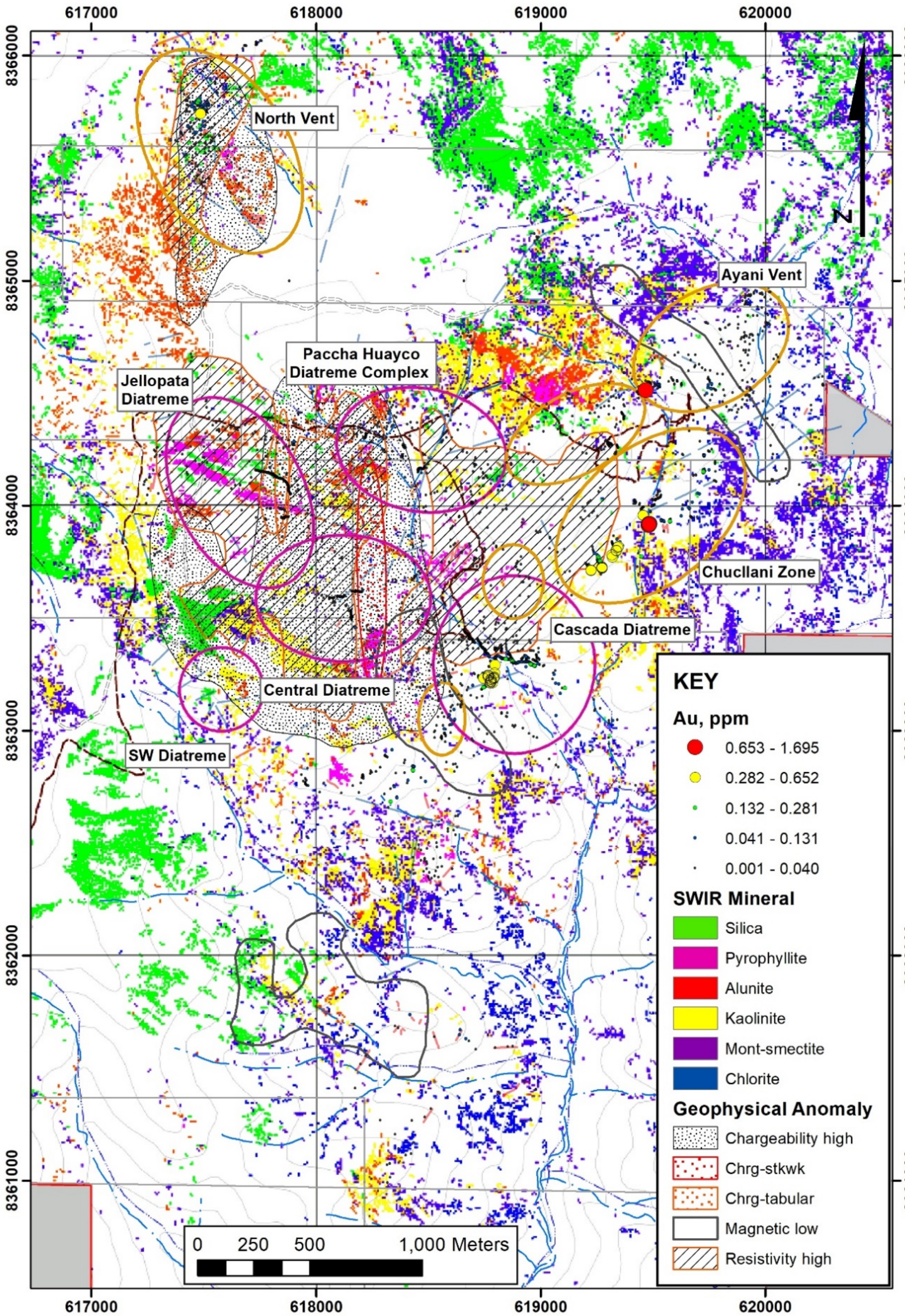

Figure 32. SWIR satellite imagery in relation to diatreme/vent structures, geophysical anomalies and Au rock geochemistry. Strong WNW trend of quartz-pyrophyllite through the Jellopata Diatreme and along the northern margin of Central Diatreme. (SWIR imagery provided by Perry, 2015).

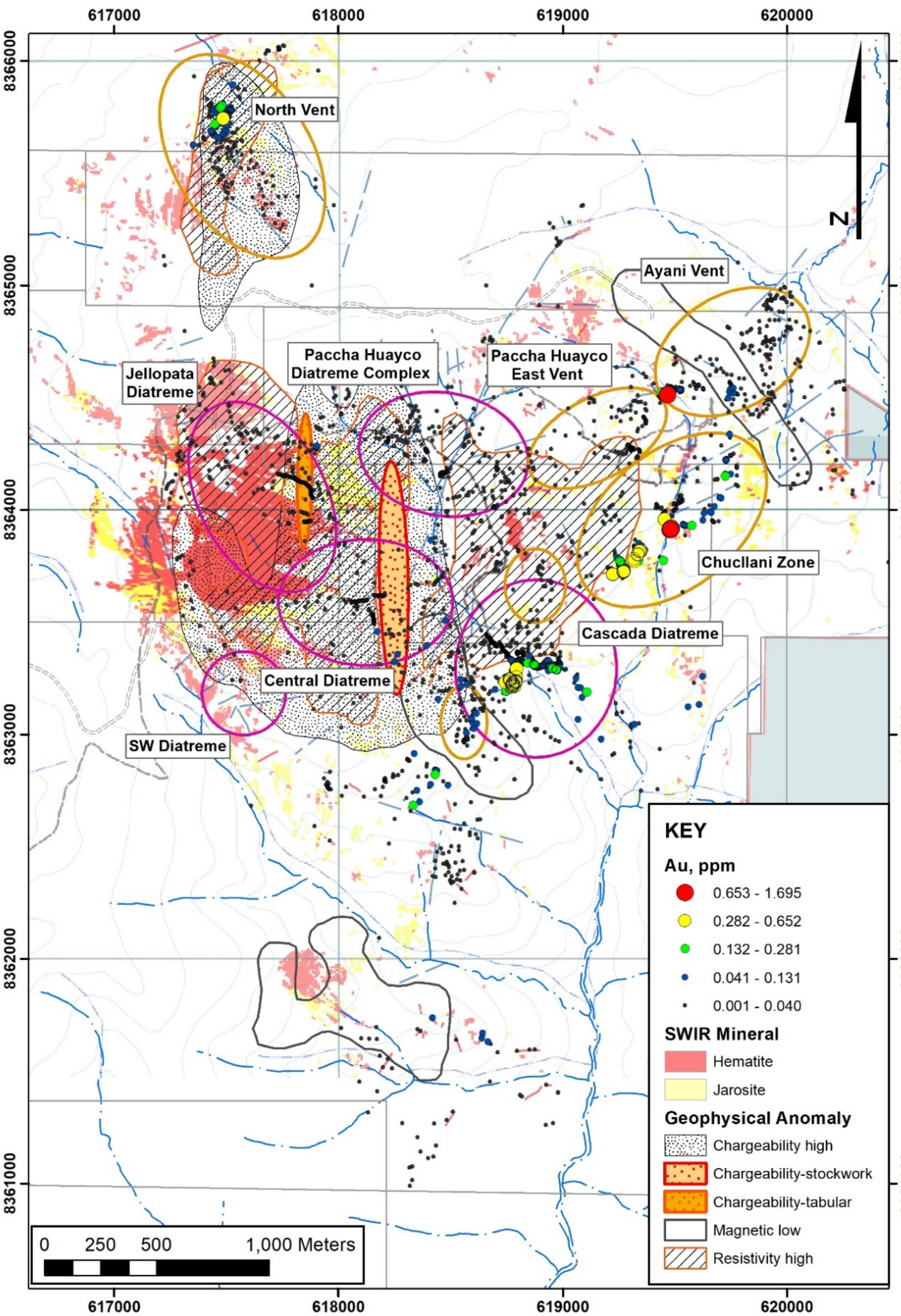

Figure 33. SWIR (FeOx) satellite imagery in relation to diatreme/vent structures, geophysical anomalies and Au rock geochemistry. (SWIR imagery provided by Perry, 2015).

10.0 DRILLING

No drilling has been executed on the Property.

11.0 SAMPLE PREPARATION, ANALYSIS AND SECURITY

Pucara sent geochemical surface samples to the analytical laboratory SGS del Peru S.A.C. from the exploration program on the Property from 2013 to 2018. In 2019, samples were sent to ALS Peru S.A. (a division of ALS Minerals) in Callao, Lima, Peru. Both laboratories are well recognized multi-national companies and ISO17025 accredited.

Samples from the project were tagged and sealed in the field, driven to Lima by Pucara personnel and delivered to the laboratories in Lima. There were no special measures taken for security as these are reconnaissance samples.

Sample preparation consisted of the following steps: weighed, dried for 8 hours at 60º C, passed through primary and secondary crushers to minus 10 mesh, then split and pulverized 250 g to 95 % less than minus 140 mesh. Multi-element analyses were determined by inductively coupled plasma (ICP-ES) following aqua regia digestion.

At ALS samples are prepped for analysis by first being weighed individually, dried, then crushed with at least 70% of the sample passing through a 2 mm sieve. This material is split in two parts: one part is stored for future analyses and remainder is pulverized until 85% of sample is less than 75 µm in particle size.

Gold was analyzed by fire-assay of a 30 g sample pulp and finished with atomic absorption (AA) at a 0.005 ppm detection limit.

Multi-element analysis by ALS's analytical package ME-MS41 for thirty-five elements uses aqua regia digestion and analysis by inductively coupled plasma-atomic emission spectrometry and mass spectrometry (ICP-MS). ME-MS41 is considered a cost-effective approach to gathering geochemical information, but for the majority of natural rock matrices, assay data reported from an aqua regia chemical digestion should be considered as representing only the leachable portion of the rock sample.

Pucara's QA/QC laboratory analysis protocol require that Pucara personnel insert control samples (standards, blanks and field duplicates) into sample batches submitted to the laboratories at an approximate rate of 1 control sample for every 12 samples submitted. A total of 319 control samples were analyzed together with the 3,856 geochemical samples (rock, soil, sediment) submitted for analysis.

After review of quality control procedures and assay results from control samples, it is the authors' opinion that the sampling preparation, analysis and security protocols exercised by Pucara meet industry standards and assure that the sample assay data are reasonably accurate and reproducible.

12.0 DATA VERIFICATION

The authors made two site visits to the Property, one in 2017 and more recently in July 2020. Mr. Park visited the Property on July 14-15, 2017 accompanied by Pucara technical personnel and spent those two days in the Central and North zones of the Property where Pucara had been focusing their sampling and mapping efforts. Mr. Park reviewed outcrops of interest in these zones to verify the geological model that Pucara was pursuing and collected four (4) rock chip samples as checks against the surface sampling that had been completed by Pucara at that time. These samples were sent for analyses to the Certimin Laboratories facility in Lima, Peru (ISO 14001, OHSAS 18001).

Dr. Miller inspected the Chucllani, Cascada and Ayani exploration targets during his field visit in July 2020 and collected thirteen (13) rock chip channel samples as verification of Pucara's sampling work in those zones. These check samples were taken as duplicates of the original sample where possible. Dr. Miller's batch of check samples were analyzed by ALS laboratory in Lima, Peru. Three control samples were inserted with this batch as well.

Figure 34. Original composite channel sample by Pucara, Cascada Diatreme. QP duplicate sample #621 (2 meter channel): 0.125 g/t Au

Table 5. QP check samples on the Lourdes Property, 2017 and 2020.

Sample ID		SECTOR	UTM (PSAD_56)		Au, ppm		QP Sample	Lithology	Alteration
Pucara	QP		East	North	Pucara	QP	Type/Size		
81695	614	AYANI	619459	8364524	0.102	0.186	Channel/2m	Hthm bx	granular silica
81690	615	AYANI	619465	8364514	0.521	0.498	Channel/2m	Hthm bx	granular silica
75394	6503	AYANI	619959	8364763	<0.005	<0.005	Chip/1m	Hthm bx	silcf clasts
79993	621	CASCADA	618769	8363208	0.141	0.125	Channel/2m	Diatreme bx	massive silica
80112	622	CASCADA	618771	8363240	0.432	0.311	Channel/2m	Diatreme bx	massive silica
79956	624	CASCADA	618773	8363293	0.141	0.135	Channel/2m	Diatreme bx	massive silica
80181	625	CASCADA	618816	8363311	0.126	0.184	Channel/2m	Diatreme bx	massive silica
80211	626	CASCADA	618860	8363315	0.075	0.079	Channel/2m	Diatreme bx	massive silica
80251	628	CASCADA	618926	8363311	0.166	0.141	Channel/2m	Diatreme bx	massive silica
80298	629	CASCADA	618986	8363321	0.008	0.009	Channel/2m	Diatreme bx	massive silica
81576	616	CHUCLLANI	619484	8363917	1.205	1.320	Channel/2m	Diatreme bx	granular silica
81582	617	CHUCLLANI	619486	8363928	0.324	0.433	Channel/2m	Diatreme bx	granular silica
81534	618	CHUCLLANI	619272	8363721	0.395	0.723	Channel/2m	Hthm bx	granular silica
81451	619	CHUCLLANI	619346	8363817	0.42	0.614	Channel/2m	Hthm bx	granular silica
75357	6500	JELLOPATA	617822	8364275	<0.005	0.043	Chip/2m	Volc flow bx	silcf clasts
70673	6501	NORTH VENT	617516	8365806	0.044	0.058	Chip/1m	Hthm bx	massive silica
69070	6502	NORTH VENT	617482	8365806	0.043	0.043	select	Hthm bx	silcf clasts

Note: QP check samples 6500 – 6503 were collected in July 2017; QP check samples 614 to 629 were collected in July 2020. QP check samples 620, 623, 627 were control samples, not listed.

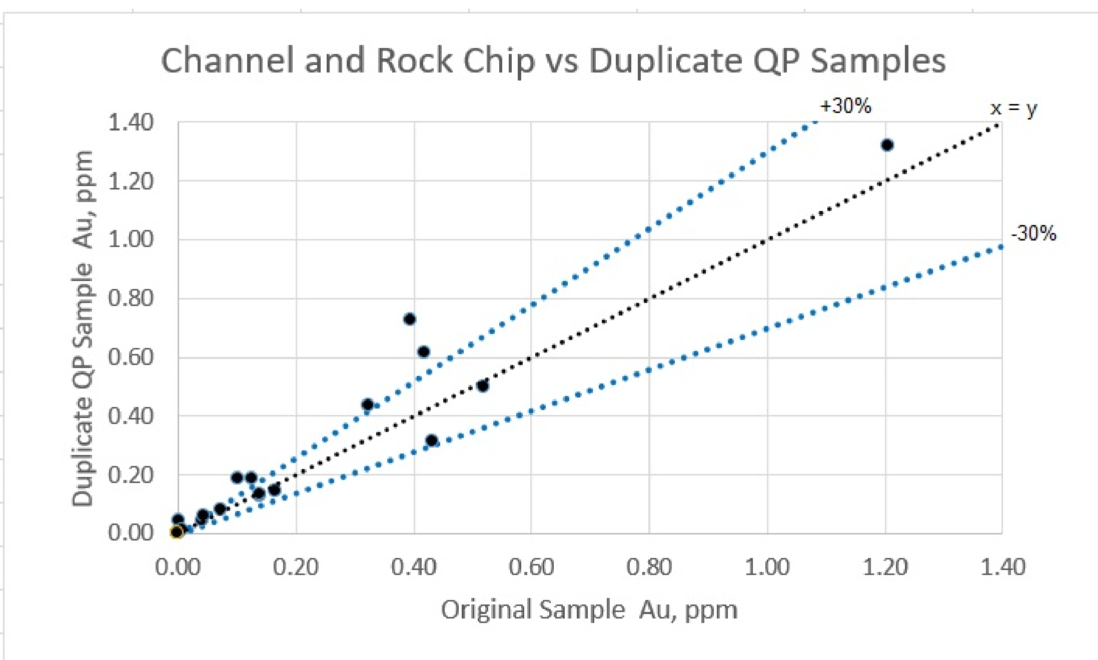

Figure 35. Comparison of Au values in Pucara rock chip/channel samples with QP check samples

The results of the check sampling exercise suggest that there were no systematic biases in the Pucara sampling. The most significant differences in Au values between original and check samples are from breccia outcrops where breccia clasts may have a higher gold content than the breccia matrix thus causing erratic reporting of Au values in those outcrops. The scatter plot of sample pairs in Figure 34 shows an acceptable level of difference in Au values between original and duplicate samples.

Given the results of the check-sampling, and a review of all geochemical data presented from 2010 through 2019, the authors believe that industry best-practice standards have been used by Pucara in conducting the surface geochemical sampling program on the Property and are of the opinion that the data verification program completed on the data collected from the Property appropriately support the database quality and the geologic interpretations derived therefrom.
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13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

Pucara is in an early phase of exploration at the Property and so has not undertaken any metallurgical testing of mineralized material from the Property, nor has Pucara considered methods of mineral processing.

14.0 MINERAL RESOURCE ESTIMATES

Pucara is in an early exploration phase at the Property; no data is available on which to base an estimate of resources.

Items 15.0 through 22.0 are not included in this report since the Lourdes Property is not considered an "advanced property" per NI 43-101 Standards of Disclosure for Mineral Projects, Part 1 and Form NI 43-101F1, Instruction #4.

23.0 ADJACENT PROPERTIES

Mining concessions adjacent to the Property are controlled by major mining companies (Figure 2). Areas of advanced argillic alteration recognized on the Property extends on to adjacent properties.

None of the operators of adjacent properties has published a mineral resource. No representation is made here implying continuity of mineralization from any adjacent property.

24.0 OTHER RELEVANT DATA AND INFORMATION

No additional information is pertinent.

25.0 INTERPRETATION AND CONCLUSIONS

The integration and interpretation of results from field work completed to date on the Lourdes Project point to four areas on the Property that stand out as primary exploration targets:

1) Jellopata-Central diatremes with Cu-Mo geochemical anomalies associated with margins of the diatreme structures,

2) Chucllani structural trend hosting strong Au-Cu-Mo geochemical anomalies through the Cascada Diatreme, Chucllani Vent and Chucllani structural zone,

3) Paccha Huayco-Ayani diatreme/vent complex, and

4) North Vent breccia complex with disseminated Au mineralization.

Lower priority targets are the eastern sector of the Ayani Vent with strong 'pathfinder' trace element anomalies associated with moderate Au anomalies, and the Central and Paccha Huayco diatremes hosting molybdenum geochemical anomalies in the Central and Paccha Huayco diatremes.

Numerous volcanic-hosted Au-Ag deposits in high-sulfidation systems are associated with diatremes, either as mineralization hosted in the diatreme breccia or as veins and breccia structures formed along the diatreme contact with wallrock, or simply spatially associated with a diatreme as an indication of hydrothermal activity resulting from multiple magmatic pulses.

The prevalent silicic and advanced argillic alteration through the volcanic pile on the Property and associated Au and pathfinder geochemical anomalies point to the potential of Au-(Ag) mineralization hosted in diatreme complexes and within horizontal to gently dipping, permeable volcanic flow units outside of diatreme structures. Depending on the strength of the mineralizing hydrothermal system and paleohydrologic flow regime, strike lengths of such deposits may be greater than 1,000 meters with widths dictated by the thickness of the permeable volcanic units. Favorable host rocks are present on the Property, particularly the dacite ash-flow tuff outcropping west of the Property and dipping to the east toward the central sector.

25.1 Jellopata-Central Exploration Target

The Jellopata target is the largest identified in the Lourdes hydrothermal system and is believed to have the highest potential to host a significant gold deposit. The target consists of a 1,200m long, 300m wide north-south trending zone of high resistivity that is interpreted to be silicic alteration within a large structurally-controlled diatreme (Figure 31). The Jellopata zone is parallel to and within the Apumayo mineralized trend which is interpreted to be the primary controlling structure. The Jellopata target is at the highest elevation in the Lourdes system (4,350m) where the surface expression consists of granular silica breccias and advanced argillic alteration characteristic of upper levels of high-sulfidation gold deposits. The exposure level is believed to be above the zone of gold deposition resulting in a blind target that produced weak gold and arsenic surface geochemical anomalies. The funnel-shaped form of the resistivity anomaly is consistent with the morphology of the exposed diatremes and vents with the inferred feeder portion extending to below 4,000m elevation.

Possible mineralization styles at the Jellopata-Central target include:

1) Disseminated Au mineralization within diatreme breccias and in adjacent permeable host rocks;

2) Au-Cu-Mo stockwork mineralization similar to the outcrop along the eastern margin of the target zone found hosting molybdenum grades of more than 1.0% Mo;

3) disseminated Au mineralization hosted in a permeable dacite tuff unit; and

4) Cu-Au stockwork mineralization in the cupola of a felsic porphyry intrusive body.

Chargeability anomaly 900/L3200 suggests the presence of a tabular source such as a mineralized dike or sheeted veining containing sulfides. The wider, but less intense, chargeability anomaly in the center of section L3200 suggests disseminated sulfides at depth, but may represent clay mineralogy related to advanced argillic alteration at shallow depths. High resistivity coincident with high chargeability suggests that the volcanic units are strongly silicified near the surface and may contain sulfide mineralization.

Resistivity and chargeability anomalies may be due to other geological conditions besides sulfide mineralization, but the observed geophysical responses closely match the responses predicted and observed from outcropping altered and mineralized areas. Chargeability may be due to the presence of clays or a high degree of 'tortuosity' in the rock matrix (related to permeability). Strongly altered host rock will show high resistivity above the water table but may not give a high resistive response below the water table if saturated with ground water containing a high content of dissolved solids.

Drill holes should be primarily oriented to test the resistivity anomaly, particularly the portion inferred to be within the structural feeder. A secondary target is the stockwork zone chargeability anomaly (An.1300/L2800) and the tabular chargeability anomaly (An.900/L3200). If further geologic mapping or drill results confirm the presence of the dacite tuff unit at depth between diatreme structures along this section line, then it should be tested in later drill phases.

25.2 Chucllani-Cascada Exploration Target

Gold, copper and molybdenum geochemical anomalies align along the NE-trending Chucllani structural trend consisting of four separate target areas over approximately 800m of strike length in a broad area of intense alteration through the Cascada Diatreme and Chucllani vent complex (Figure 32). Location of the strongest points of these anomalies appears to be controlled by the intersection of NW-trending fold axes with the Chucllani structural trend or by diatreme structures localized by the same structural intersections.

A gold geochemical anomaly located in the center of the Chucllani vent contains rock chip values ranging from 0.28 to 0.65 g/t Au along 200 meters of strike length in granular silica alteration and hydrothermal breccia structures aligned along the trace of the Chucllani structure. The altered, flat-lying volcanic unit is cut by a north-trending ravine; anomalous gold values to 1.70 g/t Au are found in the continuation of this same unit to the northeast.

The strongest Au anomaly is located in the center of the Cascada Diatreme hosted in stratiform silicic alteration (massive and vuggy silica) overlain by granular silica breccia. At least three stages of alteration/brecciation are present: diatreme brecciation, pervasive silicification, and later structurally controlled brecciation and silicification. The stratiform massive silica in the lower portions of the target area is strongly anomalous in gold where rock chip samples returned up to 0.58 g/t Au. Overall, the Cascada target has one of the strongest soil and rock chip gold anomalies on the property.

Four drill targets have been identified in the Cascada Diatreme:

1) an area measuring greater than 200m x 75m on a northeast-trending zone of granular silica alteration with outcropping gold mineralization up to 0.64 g/t Au,

2) gold-bearing granular silica (up to 1.7 g/t Au) outcropping within and marginal to a prominent ravine located 200m to the northeast of target (1) along the same structural trend,

3) a strong westerly-plunging resistivity anomaly believed to be the eastern margin of the Paccha Huayco diatreme, and

4) a covered area interpreted to be the down-faulted extension of a diatreme margin.

Difficult access to the proposed drill collar locations in the Cascada Diatreme may require man-portable drilling equipment.

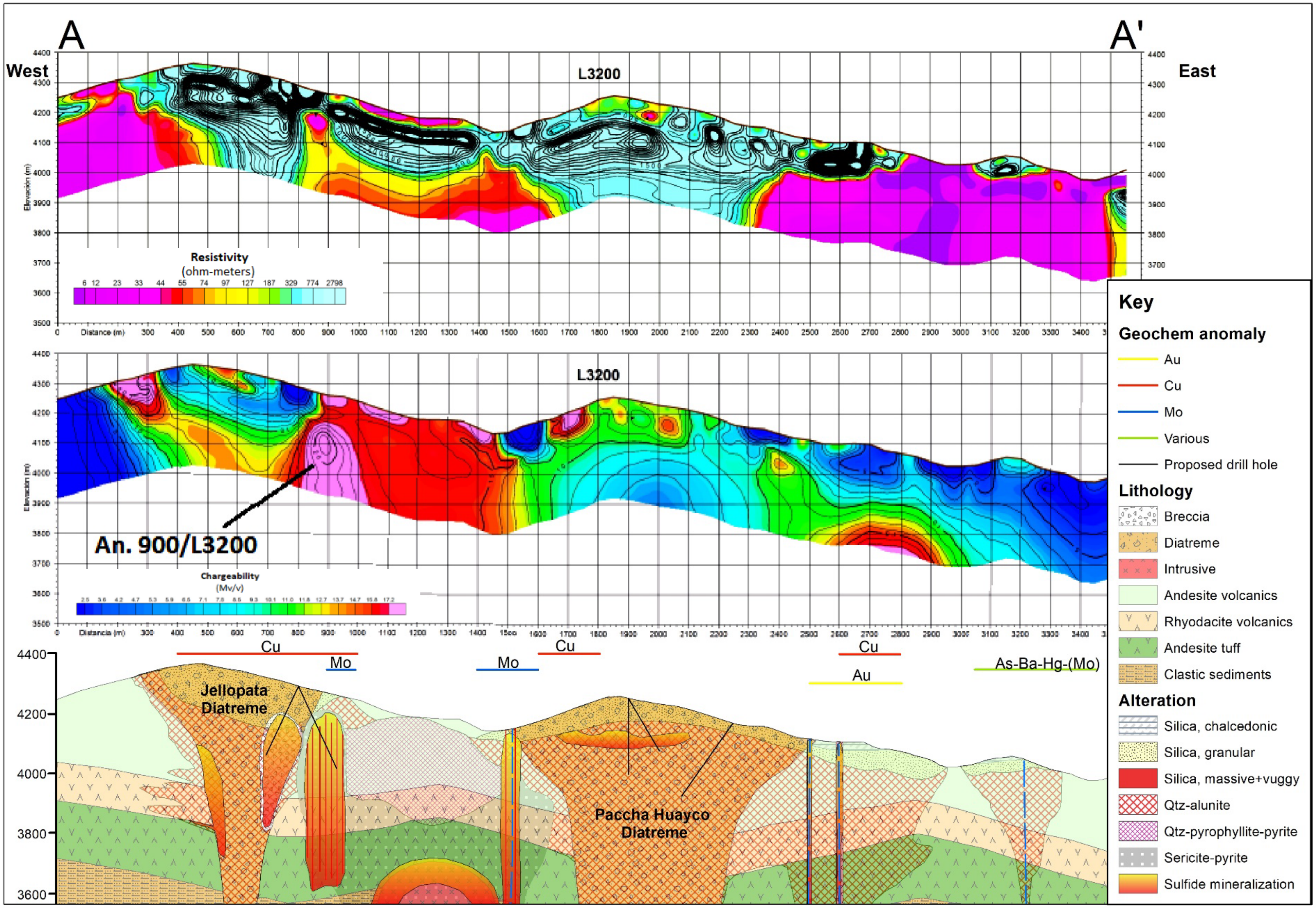

Figure 36. Section A-A' through Jellopata and Paccha Huayco diatremes illustrating conceptual exploration targets. Alteration and lithology are based on profiles of resistivity and chargeability from geophysical survey line L3200 and reconciled with Pucara field mapping (see Figure 33 for section location).

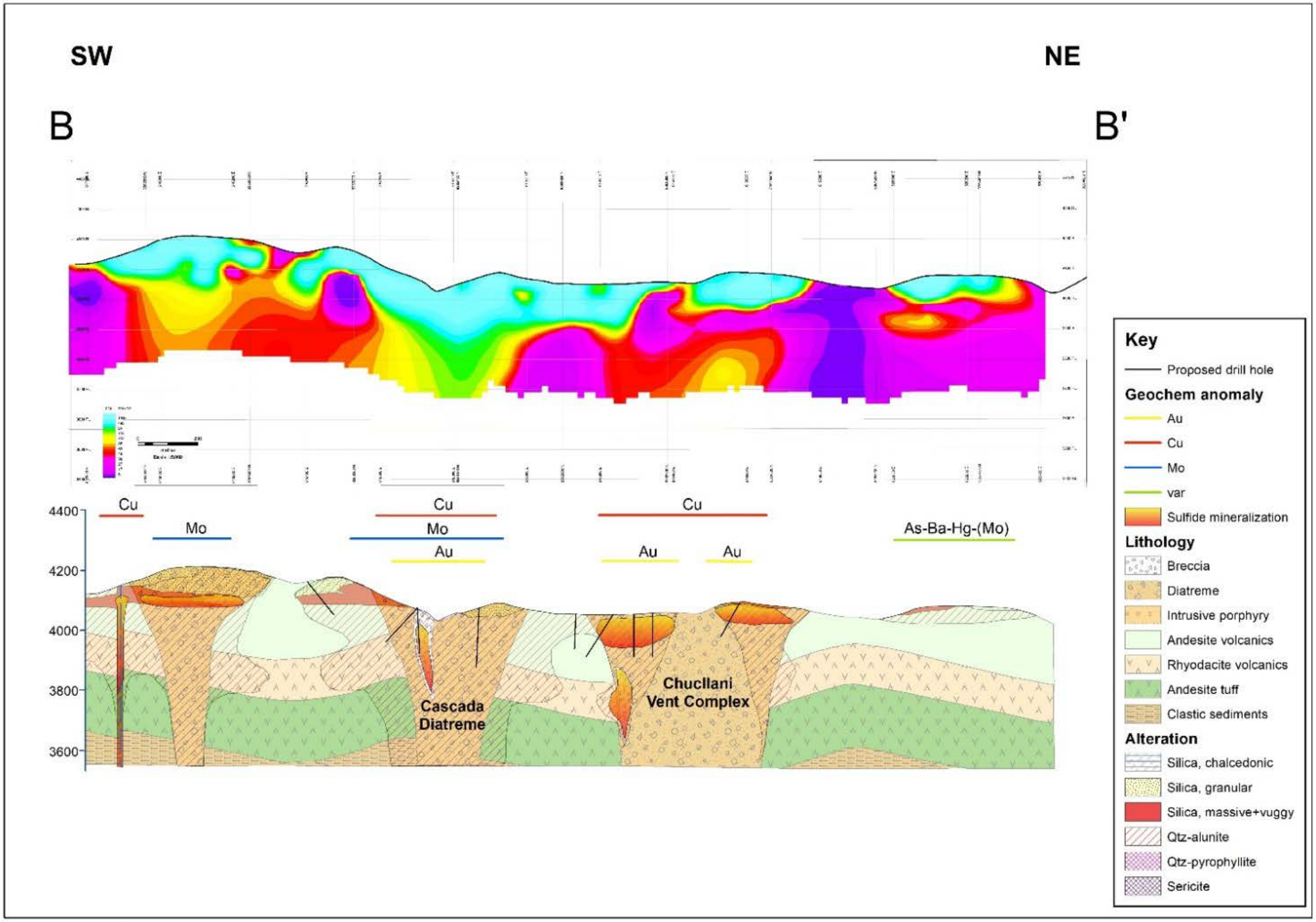

Figure 37. Section B-B', longitudinal section along Chucllani structural zone based on a reconstructed resistivity profile oriented oblique to original geophysical survey lines (see Figure 33 for section location).

A prominent geochemical anomaly of 'pathfinder' elements (As, Sb, Hg, Ba) provides an intriguing drill target on the Chucllani structure near the eastern margin of the Property. This suite of elements are generally found in the upper levels of a metal-bearing hydrothermal system suggesting potential for discovery of precious-metal mineralization in underlying permeable volcanic units. The sub-vertical breccia or 'feeder' structure described earlier provides a focal point for drilling within the broader geochemical anomaly.

25.3 Paccha Huayco-Ayani Exploration Target

The Paccha Huayco-Ayani target is in the central part of the Lourdes system and is the second largest in the project area. It occurs at the three-way intersection of the dominant structural trends on the property: the north-south Apumayo trend, the northwest fold axis trend, and the northeast Chucllani structural trend. The target area is underlain by a large resistivity anomaly that is interpreted to be a diatreme similar to the Jellopata target. The anomaly and inferred diatreme are elliptical in plan measuring 1,000m by 500m and elongated parallel to the Chucllani structural zone . It is funnel-shaped in section with a stratiform upper portion narrowing down to a vertical structural root over 600 meters wide. The resistivity anomaly occurs below pervasive advanced argillic alteration with granular and massive silica at structural intersections coincident with Cu-Mo-(Au) surface geochemical anomalies. The surface alteration mineral assemblage is characteristic of high-levels in epithermal systems, consisting of chalky, possibly steam-heated, granular silica and cryptocrystalline silica inferred to be above the level of gold deposition. The vertical range of the target area is from 3,800 meters to 4,250 meters elevation.

The Ayani zone is located at the extreme northeastern portion of the Lourdes system and consists of a 700 meters long and up to 150 meters wide structural zone of silicified breccias with proximal stratiform silicic alteration, a vent breccia with chalcedonic silica at the upper portions, and gold-bearing granular silica breccia similar to the neighboring Apumayo gold deposits. Gold-bearing granular silica (up to 0.87 g/t Au) is exposed at the edge of colluvial cover in the lower portions of the zone, suggesting that the colluvium may be concealing additional non-resistant, mineralized granular silica. Surface geochemical anomalies of gold and arsenic appear to be sourced in the zone.

25.4 North Vent Exploration Target

The North Vent breccia complex yields anomalous Au values surrounded by a well-defined halo of anomalous Zn values in soil geochemistry coincident with resistivity and chargeability geophysical anomalies. Resistivity sections indicate the form of a breccia pipe in section with a width of approximately 200 meters and length to 700 meters in accordance with the size of the mapped outcrop. However, the chargeability anomaly does not extend to a root zone at the northernmost point of the outcrop where the Au anomalies are found.

Resistivity sections may be misleading in this zone due to the presence of a high water table with high content of dissolved solids that may be masking resistive silicic alteration.

Drill holes should test outside of the breccia complex for silicified volcanic units hosting disseminated Au mineralization developed from fluids ascending along the breccia conduit.

25.5 Geophysical Anomalies as Exploration Targets

Large resistivity anomalies believed to represent concealed silicic alteration present targets in the Jellopata, Paccha Huayco, Central, and Cascada diatremes. An extensive chargeability anomaly underlies the Jellopata Diatreme extending more than 1,000 meters along a northerly axis and is especially strong in the area of stockwork magnetite veinlets. A blind, tabular chargeability anomaly is located on the eastern margin of the Jellopata Diatreme extending 500m along a northerly axis. A distinct concave-upward zone of anomalous low chargeability through Jellopata Diatreme is interpreted as a zone of strong oxidation extending to 200m below the surface. This portion of the anomaly may be more prospective for gold mineralization as the processes of gold deposition often results in enhanced permeability allowing for deep oxidation within high sulfidation deposits.

25.6 Porphyry-style mineralization

Localized porphyry-style mineralization in the Central Zone is indicated by stockwork veinlets of molybdenite (greater than 1% Mo) and magnetite-pyrite-chalcanthite exposed in a small outcrop within predominantly quartz-pyrophyllite alteration. Local dense stockworks of thin magnetite veinlets are present. Magnetite stockwork veinlets grade vertically into crackle breccia texture with highly angular clasts in a magnetite matrix. The stockwork veinlets show cross-cutting relationships indicative of multi-stage mineralization.

25.7 Conclusions

1. Exploration results on the Property to date have defined quality exploration targets in the Jellopata, Cascada, Paccha Huayco, and Central diatremes, and North, Chucllani and Ayani vents related to a high-sulfidation, Au-bearing epithermal system possibly associated with an underlying porphyry Cu-Mo-(Au) system.

2. The Property has been and is being evaluated in a professional manner consistent with industry standards and best practice.

3. The Pucara Project is a property of merit that justifies the continuation of exploration programs designed to test the deposit models outlined in this report.

25.8 Project Risks

As an early-stage exploration project, there are few project risks involved other than the matter of discovering significant mineralization within the Property area.

Non-geologic factors to be considered as concerns for the project going forward are community relations and the permitting process for continuation of the exploration program. Pucara has been maintaining a good relationship with the community; the authors are not aware of any significant points of contention between Pucara and the local community. Approval of exploration permits in Peru has been slow during the past year due to an unsettled political environment, but there are recent signs of effort by the administering agencies to begin to expedite the permitting process.

26.0 RECOMMENDATIONS

26.1 Two-Phase Drill Program

Field work completed to date on the Lourdes Property has defined drill targets that should be pursued as the next step in the Property's exploration program. A two-phase drill program is recommended to test drill targets in the Central Zone (Jellopata, Cascada, Central diatremes), Northeast Zone (Paccha Huayco, Chucllani, Ayani vents) and North Zone (North Vent) (Figure 33).

The first phase of drilling on these targets should consist of 5,450 meters of reverse circulation (RC) drilling with holes programmed to test the most prospective areas as defined by geochemical and geophysical anomalies. Priority in distributing drilling meters should be given first to the Central Zone, then Northeast Zone (Chucllani structural target), and finally to the North Zone. Drilling proposed targets in the Cascada Diatreme may require man-portable drill rigs due to difficult access.

The objective in drilling the Central Zone is to test whether resistivity and chargeability geophysical anomalies indicate disseminated Au-Cu mineralization hosted in diatreme structures and favorable volcanic units. Vertical drill holes should test for porphyry mineralization in the stockwork zone to depths 300 meters to 400 meters guided by specific geophysical anomalies.

Drill holes should target the Chucllani structural trend through the Central and Northeast Zones in the areas of the three gold anomalies along this structure and fill in with later drilling along this structure where warranted.

Drilling in the North Zone should be directed at testing the breccia complex and surrounding volcanic stratigraphy, again using specific geophysical anomalies to orient the drilling.

The Northeast Zone shows a prominent geochemical anomaly of 'pathfinder' elements (As, Sb, Hg, Ba) associated with silica morphologies that suggest the presence of a vertical conduit for hydrothermal solutions. Testing this zone will require at least one hole to reach greater than 300 meters in depth.

All of the 40 platforms allowable under a DIA exploration permit should be constructed in the first round of drilling to allow flexibility to adjust target priorities during the course of the drill program.

Using a RC drill rig for the first phase of drilling will be less costly and faster than diamond core drilling (DDH). RC drilling may cost up to 50% less than DDH which would allow for drilling approximately twice as many meters than DDH with the same budget during the first phase. Cost advantages of RC drilling have to be weighed against its disadvantages: generally restricted to 300 meters depth, significant deviation of angle holes at depth, larger drill platform footprint, susceptible to grade smearing, and lower quality of geological information (no rock in hand to precisely sample and describe). These disadvantages are mitigated during a first pass of 'scout' drill program with the intent of intercepting mineralization, then to be followed by DDH drilling in a second phase of the program, budgeted for 2,200 meters, that would upgrade the level of confidence in geological and geochemical data obtained from RC drilling.

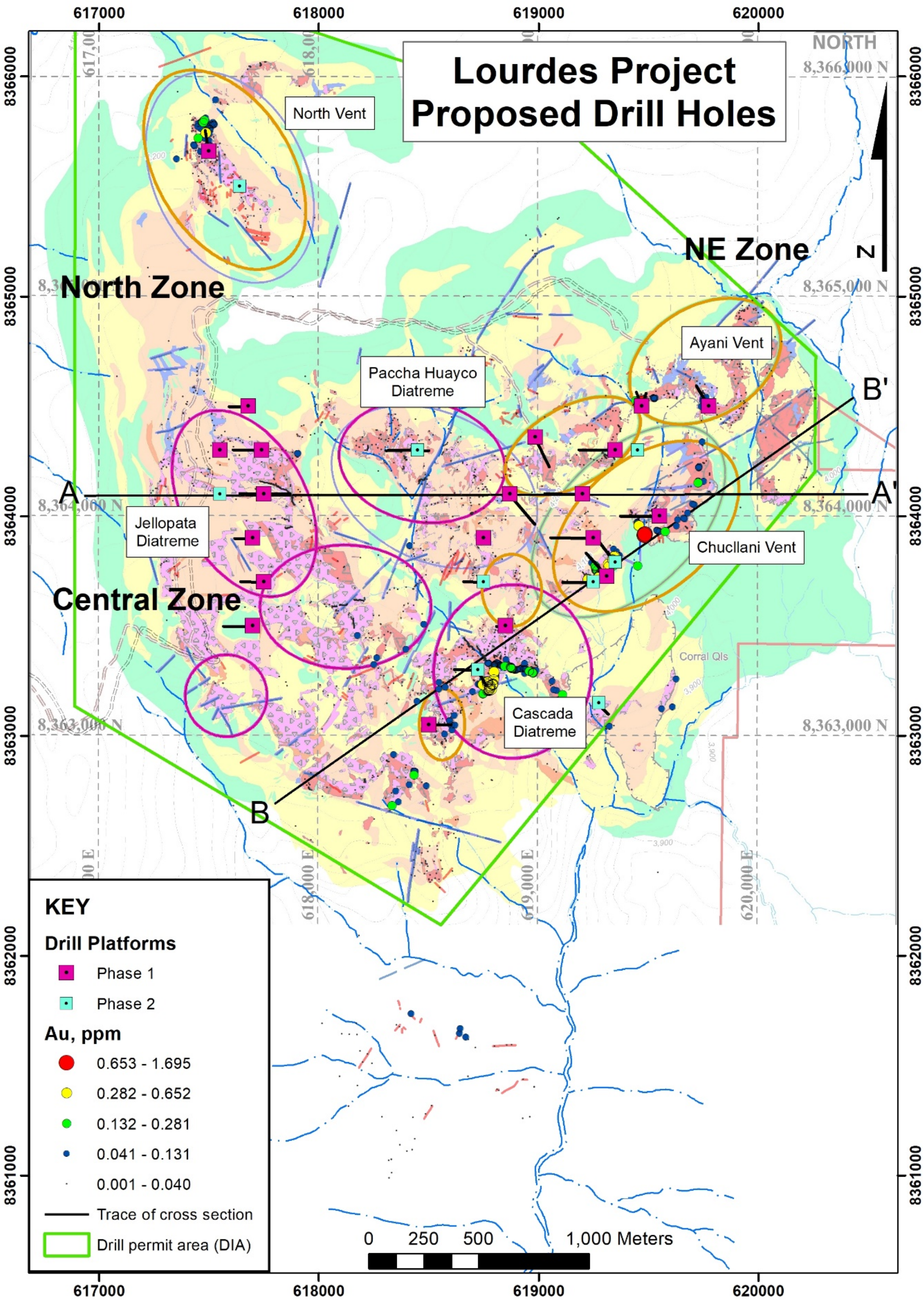

Figure 33. Proposed platform locations for drill program Phase 1 through Phase 2 (Pucara, 2020) plotted on alteration base map (see Figure 9 for Alteration key).

26.2 Exploration Budget

Cost of the exploration program outlined above is estimated at CAD$ 2,942,649 over a period of 9 months (Tables 6 and 7). Reverse circulation drilling is programmed for a total of 5,450 meters in Phase 1 of the drill program at an estimated cost of US$ 214/meter. Diamond drilling (DDH) will follow in Phase 2 with 2,200 meters of drilling with the objective of pursuing mineralized targets identified in Phase 1.

Table 6. Phase 1 Exploration Program Budget

Item	Amount	Units	CAD$	
			Unit Cost	Total
Wages – field, technical personnel	6.5	months	32,008	208,052
Community relations	6.5	months	5,756	37,414
Permitting (environmental, archeology, water)	1		76,925	76,925
Drill road accesses & construction	500	hours	228	114,000
Drill rig mobilization, remediation	2	months	54,171	108,342
RC drilling - 1 twelve hour shift	5,450	meters	214	1,166,300
Drill sample assays + 10% QA/QC	2,998	samples	23	68,954
Drill camp logistics and personnel	6.5	months	21,760	141,440
Consultant	3	months	13,628	40,884
Sub - Total Phase 1				**1,962,311**
Contingencies	5%			98,116
Total Phase 1				**CAD 2,060,427**

Table 7. Phase 2 Exploration Program Budget

Item	Amount	Units	CAD$	
			Unit Cost	Total
Wages – field, technical personnel	3	months	24,803	74,409
Community relations	3	months	3,271	9,813
Permitting (environmental, archaeology, water)	1		40,884	40,884
Drill road accesses & construction	200	hours	204	40,800
DDH mobilization, remediation	3	months	22,486	67,458
DDH drilling	2,200	meters	204	448,800
Drill core prep, logging, assays + 10% QA/QC	1,210	samples	27	32,670
Drill camp logistics and personnel	3	months	32,707	98,121
Consultant	2	months	13,628	27,256
Sub - Total Phase 2				**840,211**
Contingencies	5%			42,011
Total Phase 2				**CAD 882,222**

Phase 1 + Phase 2 CAD 2,942,649

26.3 Additional Geological Studies

The following studies are recommended for a better understanding of the Property’s geology and mineral potential.

1) Detailed mapping of diatreme and volcanic vent structures with particular attention to:
    - degree of stratification and attitude of breccia matrix material
    - abundance, composition, and form of breccia clasts,
    - alteration of breccia matrix, especially differentiation between finely comminuted siliceous wall rock and primary granular silica alteration
    - contact with wall rock to define margins of structures
    - evidence of maar and/or tuff ring

2) Selective geochemical sampling of diatreme breccia clasts as a test for concealed mineralization disrupted by diatremes at depth.

3) Petrographic and reflectance spectrometer scanning studies of hand samples, drill chips and drill core to better define volcanic stratigraphy, mineralization, and zonation of alteration.

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CERTIFICATE OF QUALIFIED PERSON: Mr. Steven Park

I, Steven L. Park, do hereby certify that:

- I am a geologist residing at 19505 Sedgefield Terrace, Boca Raton, Florida, USA.

- This certificate applies to the report entitled "Technical Report on the Lourdes Gold Project, Department of Ayacucho, Peru" ("technical report") with an effective date of July 15, 2020.

- I have read the definition of "qualified person" as defined by National Instrument 43-101 and certify that I meet that definition by virtue of my education, experience, and professional affiliation for the purposes of this Instrument. I graduated with a M.Sc. in Economic Geology from Mackay School of Mines at the University of Nevada-Reno, 1983, and have since practiced as a professional geologist for more than thirty years in the Americas including over 20 years of continuous exploration experience in Peru evaluating and managing mineral exploration programs covering a variety of mineral deposit types. I am a member in good standing with the American Institute of Professional Geologists (member #10849) and a Certified Professional Geologist.

- I visited the Lourdes property, subject of this technical report, on July 14-15, 2017.

- I am responsible for Sections 1 – 11, 13, 14, 23 – 27 of this technical report, except as described in the disclaimer given in Section 3: Reliance on Other Experts.

- I am independent of Pucara Resources Corp., Pucara Resources S.A.C., and Magnitude Mining Ltd., as defined by applying the tests set out in Section 1.5 of the Instrument. I am not, nor have been, an officer, director, or employee of Pucara Resources Corp, Pucara Resources S.A.C., nor Magnitude Mining Ltd. I have neither received nor expect to receive shares of Pucara Resources Corp nor Magnitude Mining Ltd or any other consideration besides fair remuneration for the preparation of this report. I have not earned the majority of my income during the preceding three years from Pucara Resources Corp nor Magnitude Mining Ltd nor from any associated or affiliated companies. I have had no prior involvement or interest with the Property that is the subject of this technical report.

- I have read National Instrument 43-101 and confirm that the portions of the technical report for which I am responsible have been prepared in compliance with that Instrument. I certify that, to the best of my knowledge, information and belief, that, as of the Effective Date, the portions of the Technical Report for which I am responsible contain all the scientific and technical information that is required to be disclosed to make this technical report not misleading.

"Steven L. Park"

Steven L. Park
July 15, 2020

CERTIFICATE OF QUALIFIED PERSON: Dr. Owen Miller

I, Owen D. W. Miller, Ph.D, FAusIMM(CP), do hereby certify that:

- I am consulting geologist and founder and General Manager of Cardo Consultants SAC of Lima, Peru. I reside at Roca y Bolonia 291/701, Miraflores, Lima, Peru.

- This certificate applies to the report entitled "Technical Report on the Lourdes Gold Project, Department of Ayacucho, Peru" ("technical report") with an effective date of July 15, 2020.

- I have read the definition of "qualified person" as defined by National Instrument 43-101 and certify that I meet that definition by virtue of my education, experience, and professional affiliation for the purposes of this Instrument. I graduated with a B. Sc. (Hons) degree in Geology and Mineralogy from the University of Aberdeen, UK, (1989) and a Ph.D from Aberdeen University (1994). I have practiced my profession continuously since June 1994 and have been involved in exploration, mining and evaluation on a variety of mineral deposit types, including low- and high-sulfidation epithermal gold, porphyry copper, Cu-Au skarn, massive-sulfide gold, intrusion-related gold, and sediment-hosted/Carlin-type gold deposits. I am a member in good standing of the Australian Institute of Mining and Metallurgy (AusIMM Mem. No. 207275).

- I visited the Lourdes property, subject of this technical report, on July 2 – 3, 2020 and am responsible for Section 12 of this technical report.

- I am independent of Pucara Resources Corp., Pucara Resources S.A.C., and Magnitude Mining Ltd., as defined by applying the tests set out in Section 1.5 of the Instrument. I am not, nor have been, an officer, director, or employee of Pucara Resources Corp, Pucara Resources S.A.C., nor Magnitude Mining Ltd. I have neither received nor expect to receive shares of Pucara Resources Corp nor Magnitude Mining Ltd or any other consideration besides fair remuneration for the preparation of this report. I have not earned the majority of my income during the preceding three years from Pucara Resources Corp nor Magnitude Mining Ltd nor from any associated or affiliated companies. I have had no prior involvement or interest with the Property that is the subject of this technical report.

- I have read National Instrument 43-101 and confirm that the portions of the technical report for which I am responsible have been prepared in compliance with that Instrument. I certify that, to the best of my knowledge, information and belief, that, as of the Effective Date, the portions of the Technical Report for which I am responsible contain all the scientific and technical information that is required to be disclosed to make this technical report not misleading.

-

"Owen D W Miller"

Owen D W Miller, Ph.D. FAusIMM(CP)
July 15, 2020

DATE AND SIGNATURE OF AUTHORS

This report titled "Technical Report on the Lourdes Gold Project, Department of Ayacucho, Peru", with effective date of July 15, 2020, was prepared on behalf of Pucara Resources Corp. and Magnitude Mining Ltd. by Mr. Steven L. Park and Dr. Owen D. W. Miller and signed:

"Steven L. Park"

Steven L. Park
C.P.G.

"Owen D W Miller"

Owen D W Miller, Ph.D. FAusIMM(CP)

15th day of July, 2020

Appendix A:

Lourdes Project Geochemical Maps –

Rock Chip, Soil, Stream Sediment

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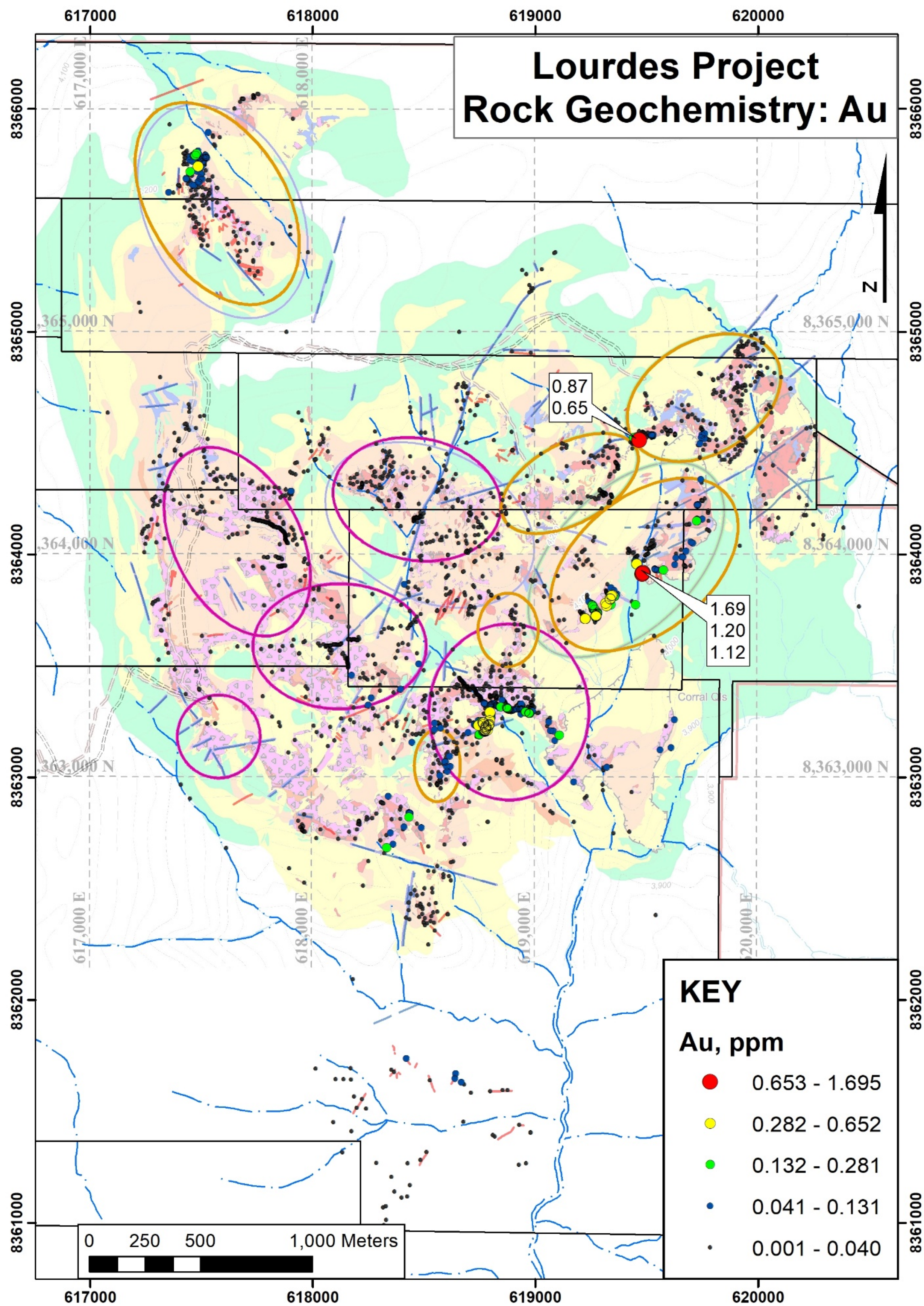
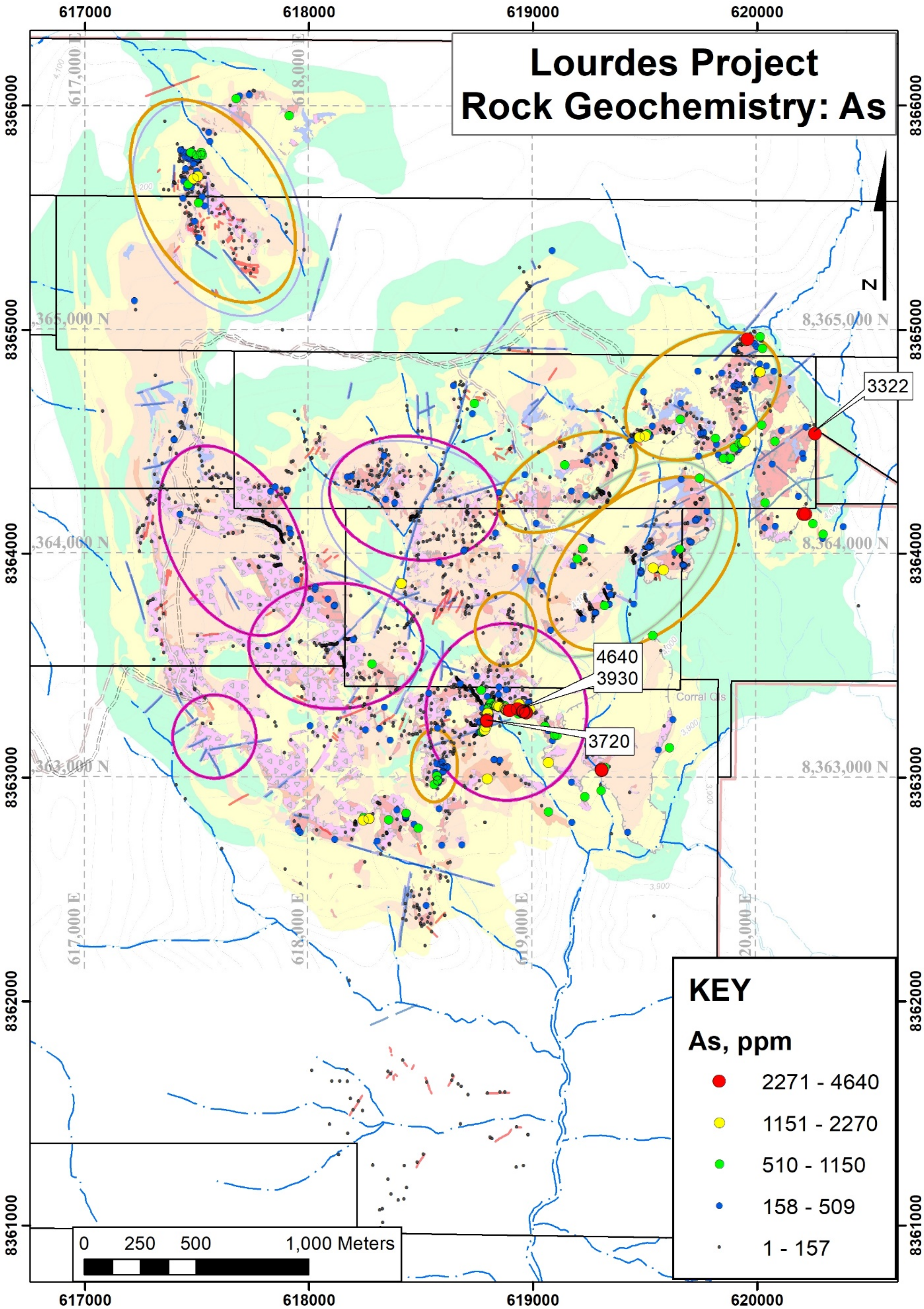
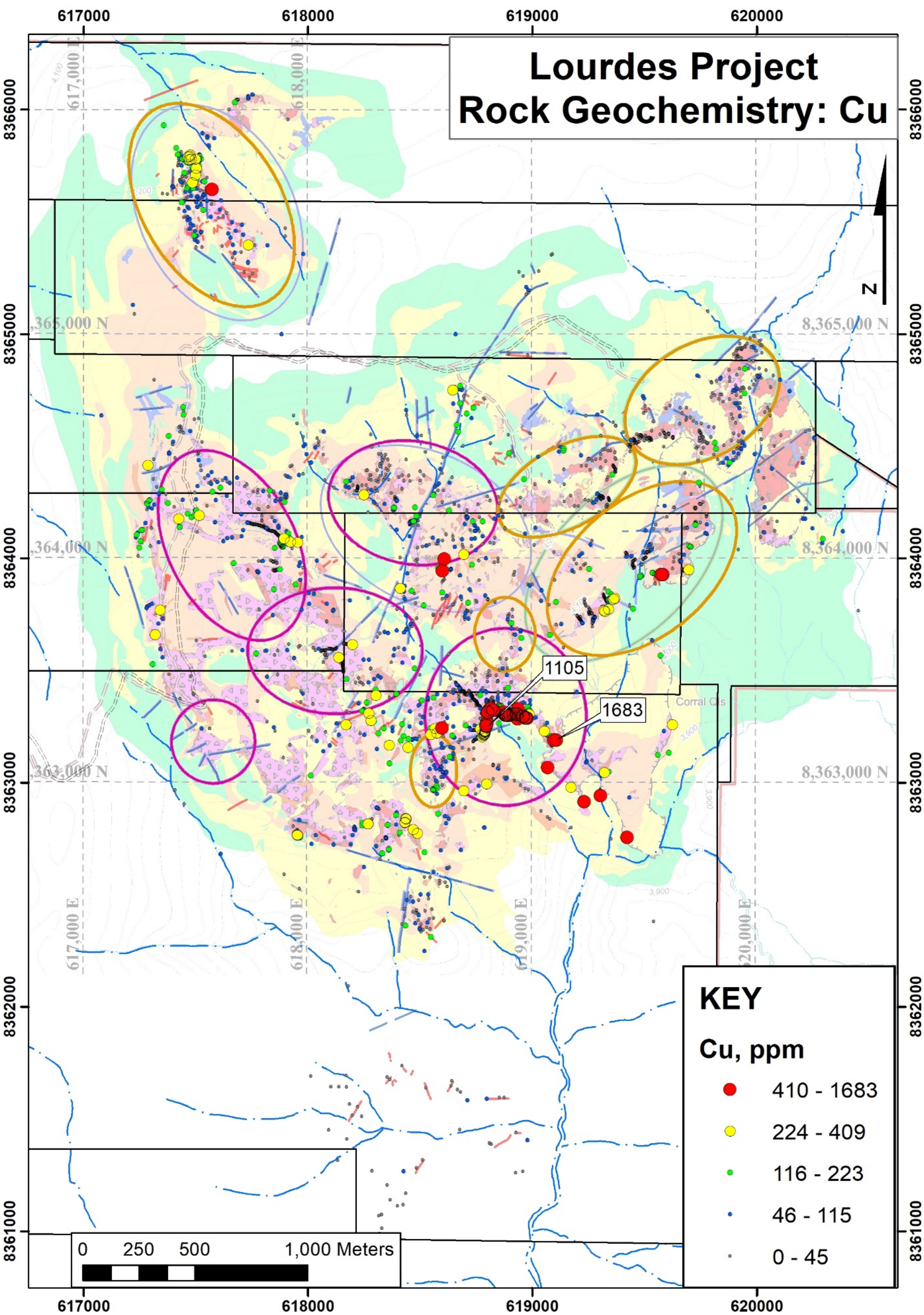
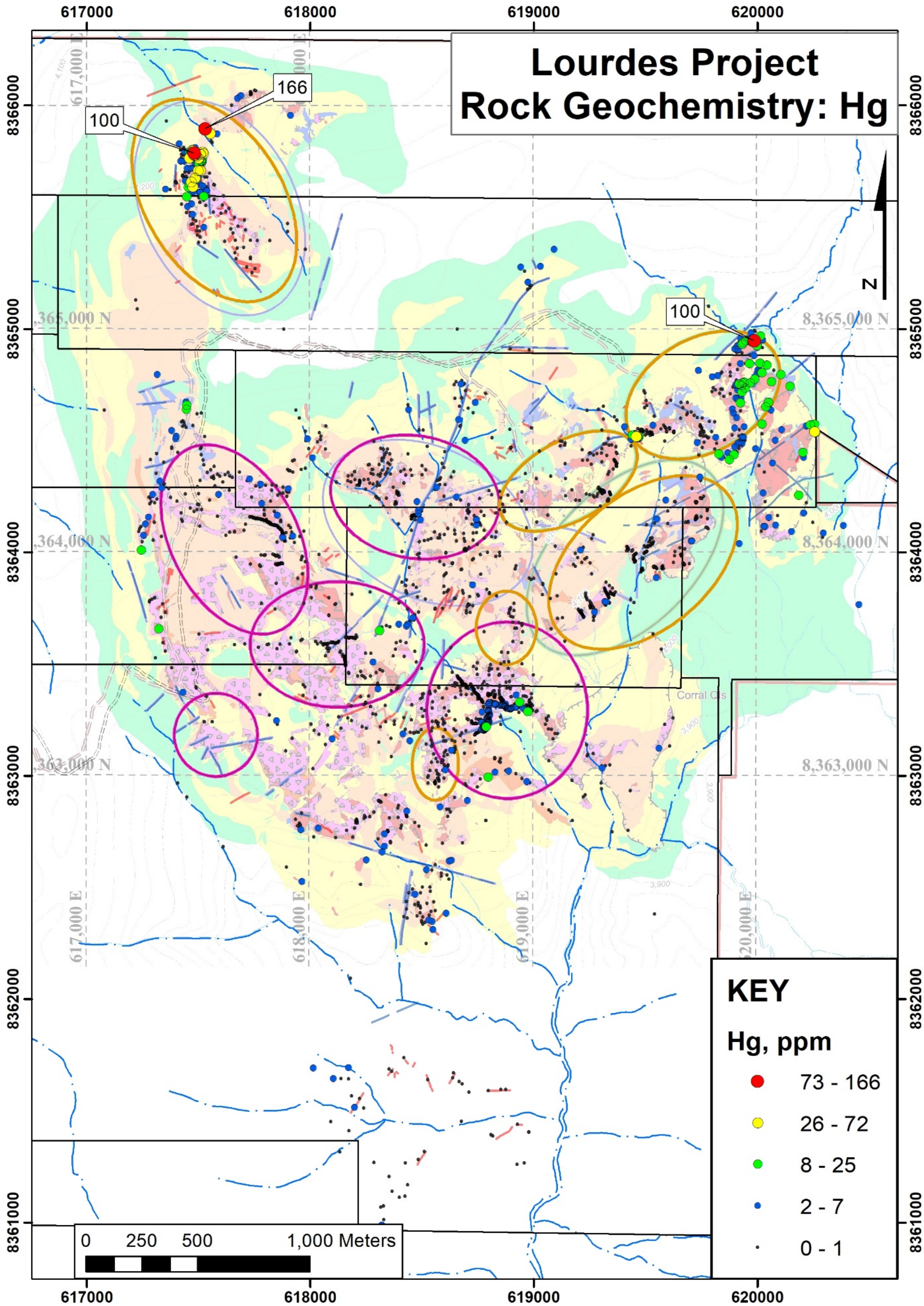
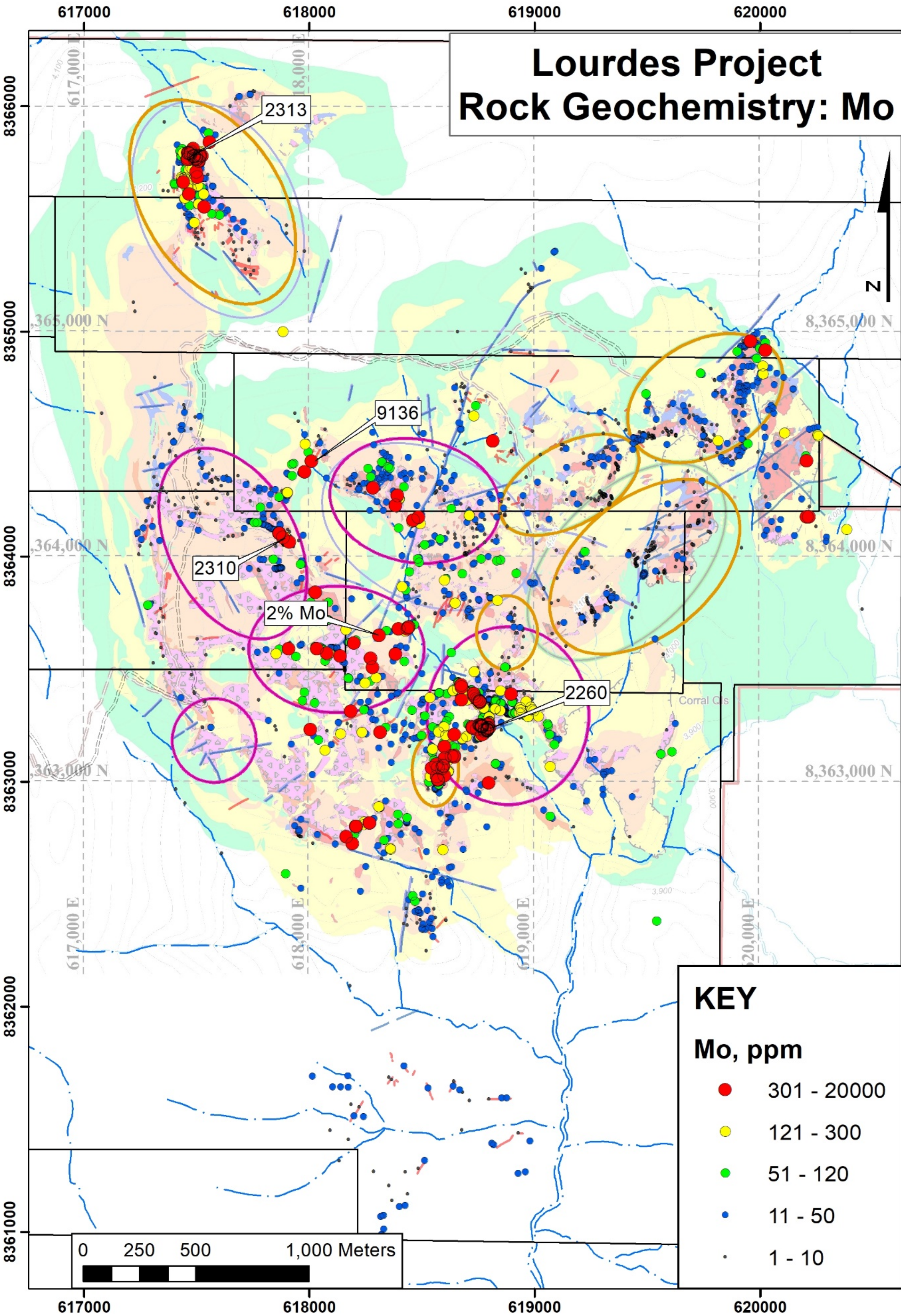
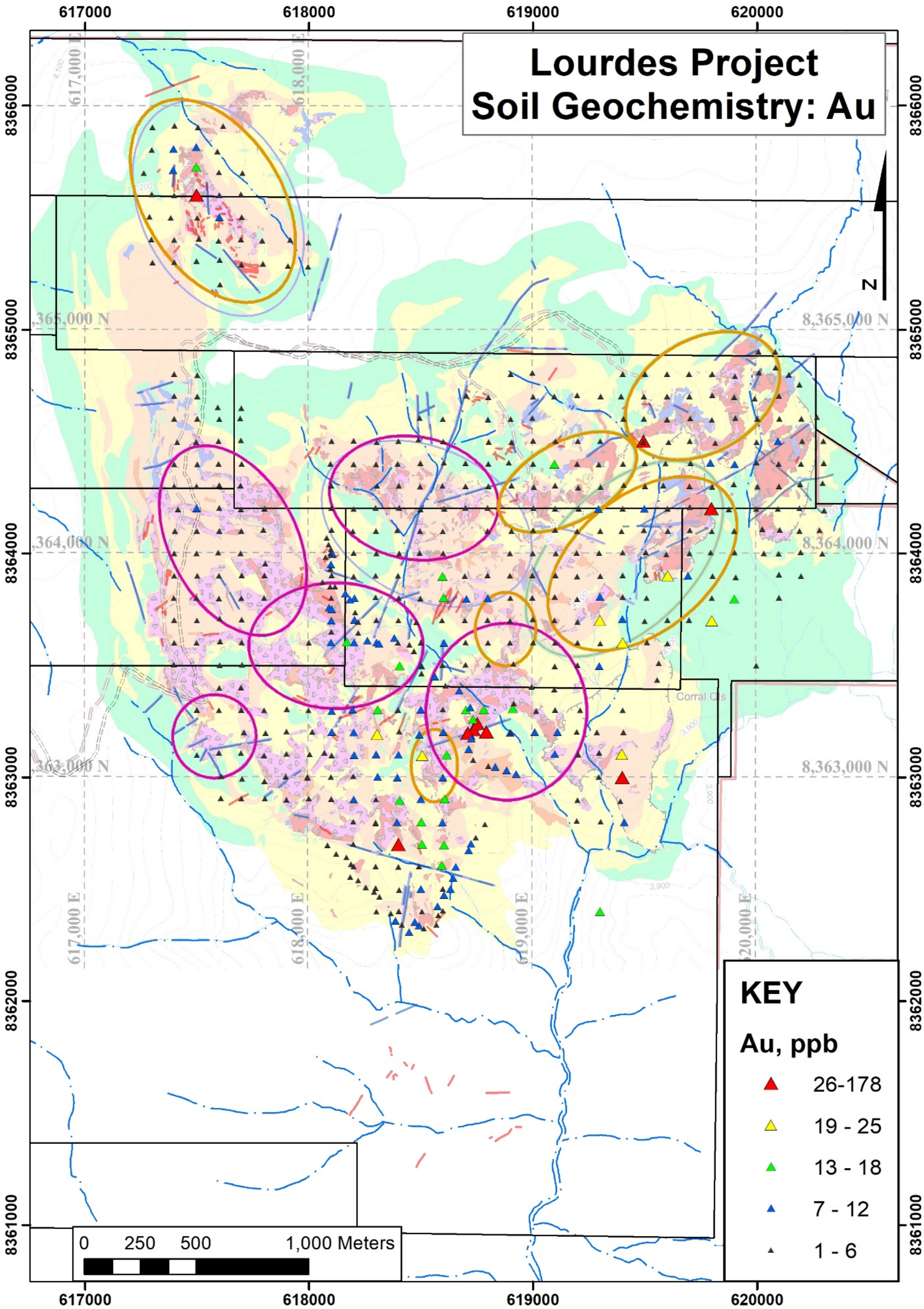

Lourdes Project
Rock Geochemistry: Au
617000
618000
619000
620000
8366000
8365000
8364000
8363000
8362000
8361000
0.87
0.65
1.69
1.20
1.12
N
KEY
Au, ppm
0.653 - 1.695
0.282 - 0.652
0.132 - 0.281
0.041 - 0.131
0.001 - 0.040
0 250 500 1,000 Meters

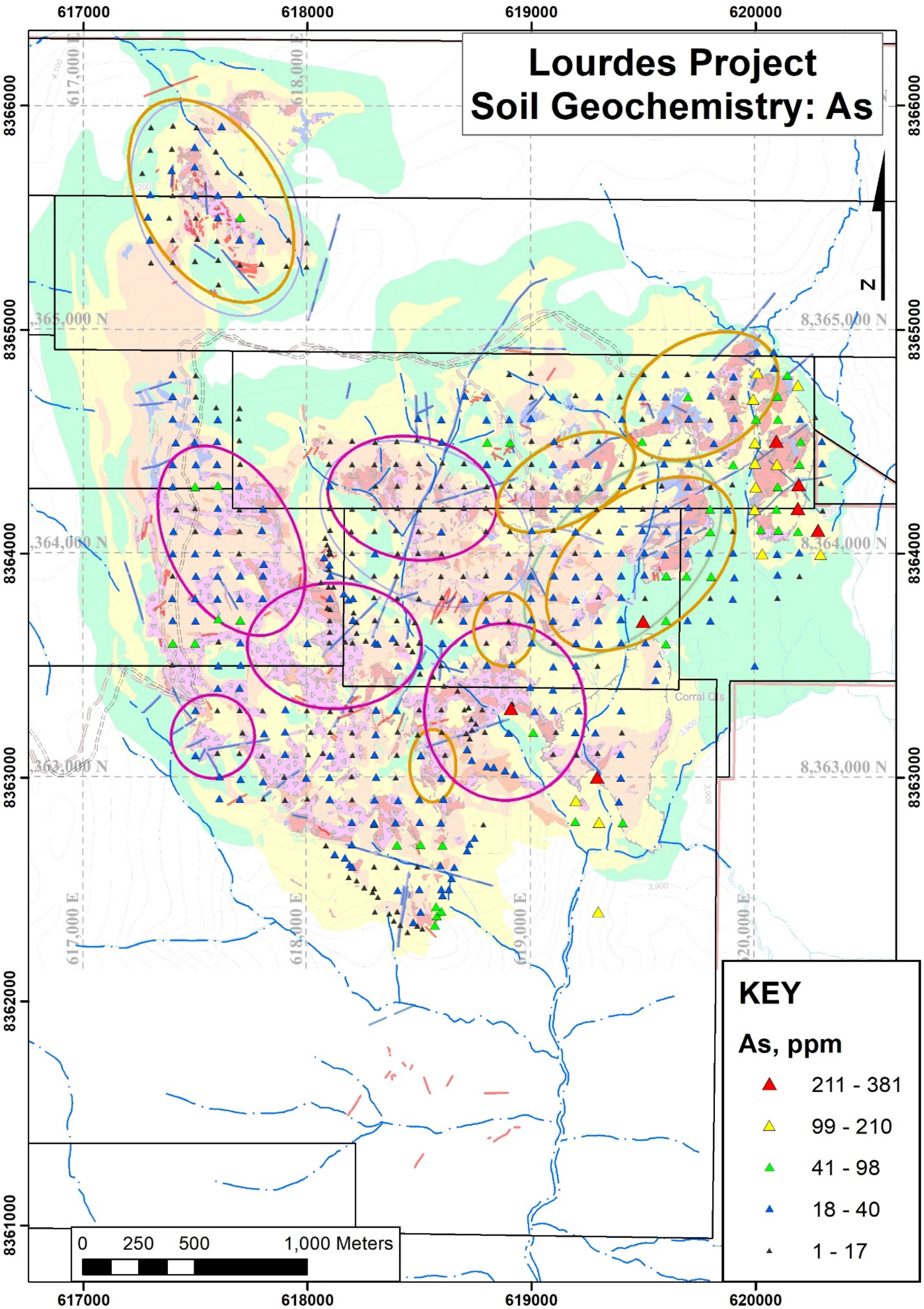

Lourdes Project
Rock Geochemistry: As
KEY
As, ppm
2271 - 4640
1151 - 2270
510 - 1150
158 - 509
1 - 157
4640
3930
3720
3322
Corral Cis
0 250 500 1,000 Meters
N
617000
618000
619000
620000
8361000
8362000
8363000
8364000
8365000
8366000
8,365,000 N
8,364,000 N
8,363,000 N
617,000 E
618,000 E
619,000 E
620,000 E

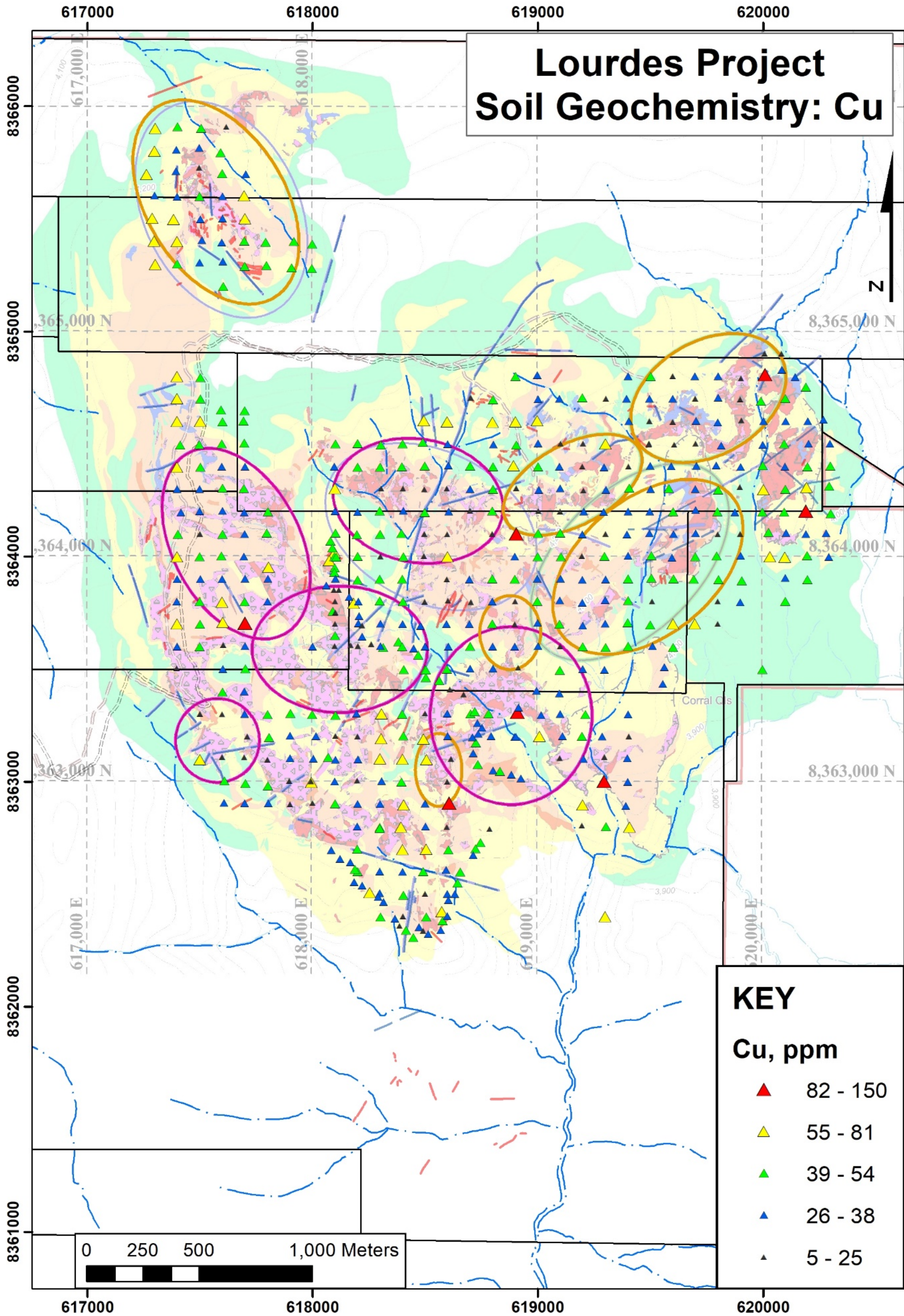

Lourdes Project
Rock Geochemistry: Cu
617000
618000
619000
620000
8366000
8365000
8364000
8363000
8362000
8361000
8,365,000 N
8,364,000 N
8,363,000 N
1105
1683
Corral Cis
N
KEY
Cu, ppm
410 - 1683
224 - 409
116 - 223
46 - 115
0 - 45
0 250 500 1,000 Meters

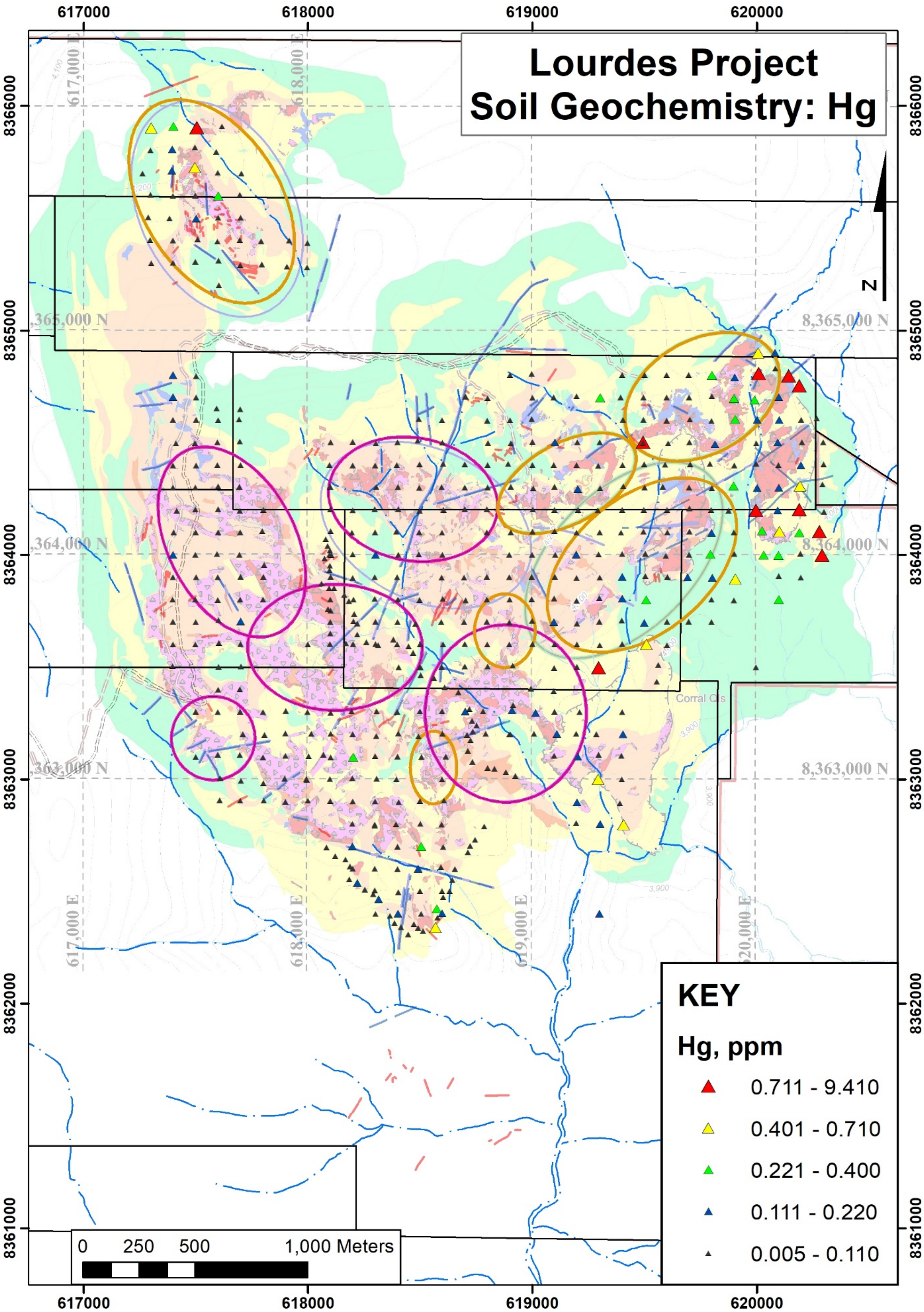

Lourdes Project
Rock Geochemistry: Hg
617000
618000
619000
620000
8366000
8365000
8364000
8363000
8362000
8361000
166
100
100
8,365,000 N
8,364,000 N
8,363,000 N
Corral Qs
N
KEY
Hg, ppm
73 - 166
26 - 72
8 - 25
2 - 7
0 - 1
0 250 500 1,000 Meters

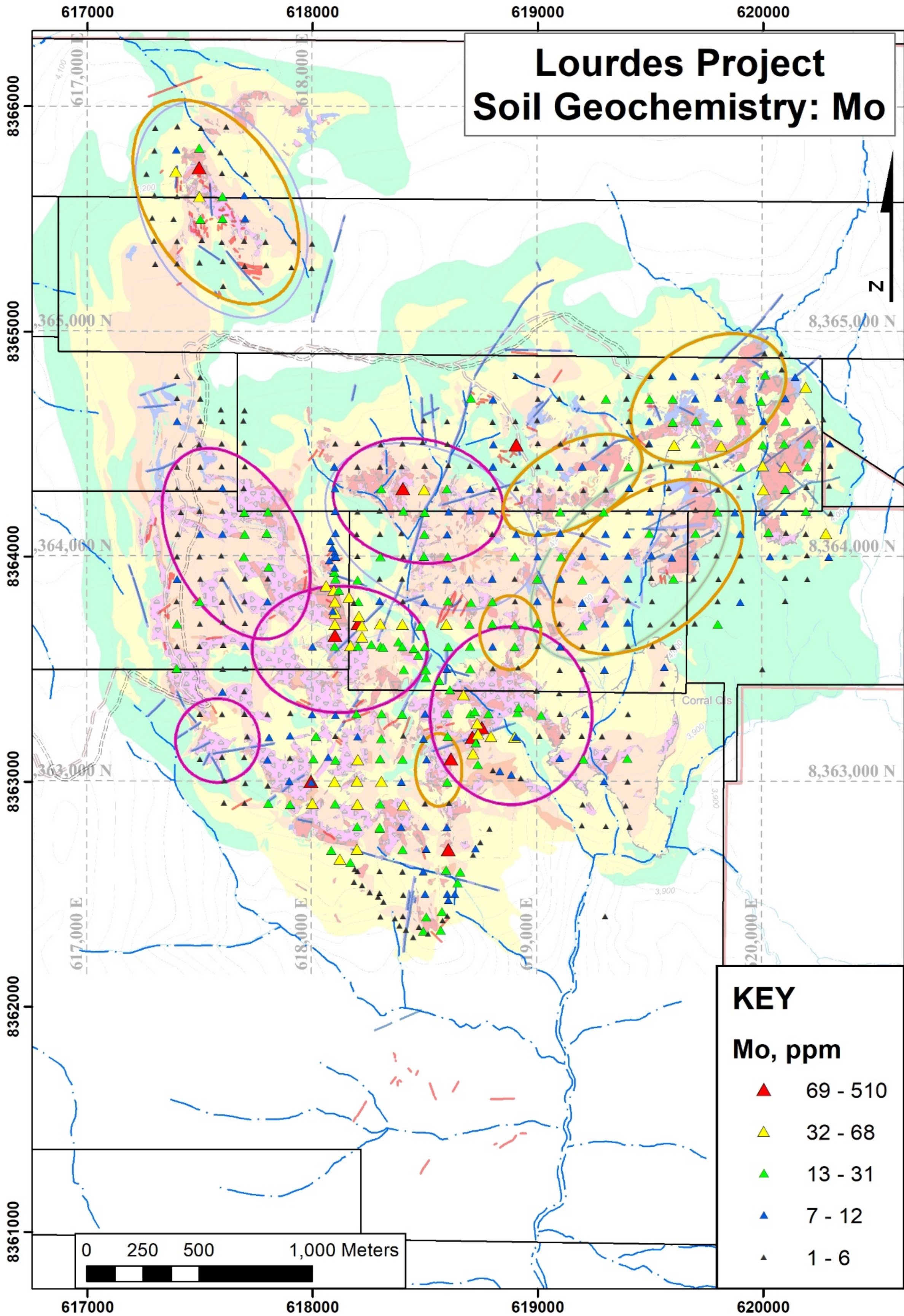

Lourdes Project
Rock Geochemistry: Mo
617000
618000
619000
620000
8366000
8365000
8364000
8363000
8362000
8361000
2313
9136
2310
2% Mo
2260
N
KEY
Mo, ppm
301 - 20000
121 - 300
51 - 120
11 - 50
1 - 10
0 250 500 1,000 Meters

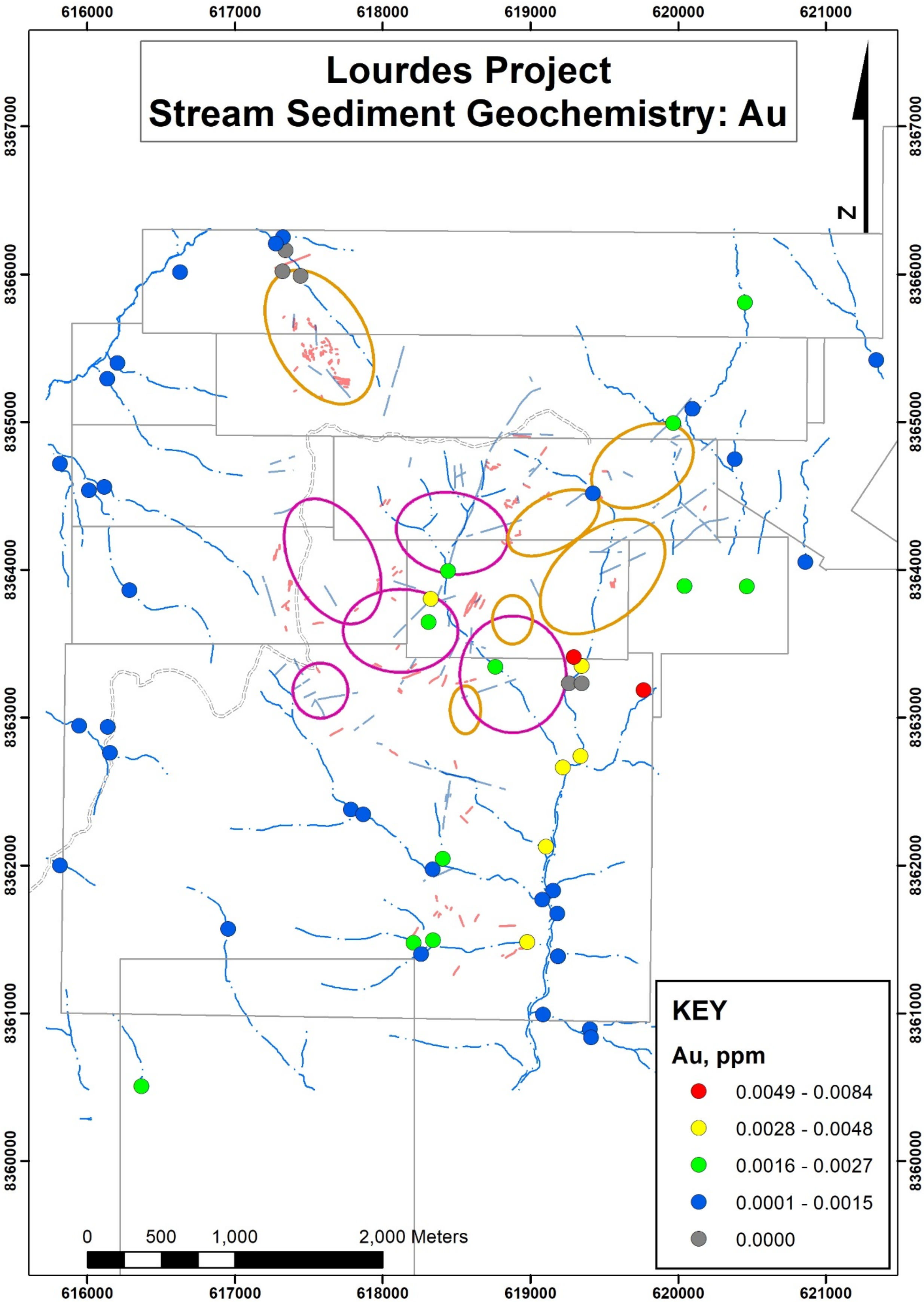

Lourdes Project
Soil Geochemistry: Au
617000
618000
619000
620000
8366000
8365000
8364000
8363000
8362000
8361000
N
KEY
Au, ppb
26-178
19 - 25
13 - 18
7 - 12
1 - 6
0 250 500 1,000 Meters
Corral Cls

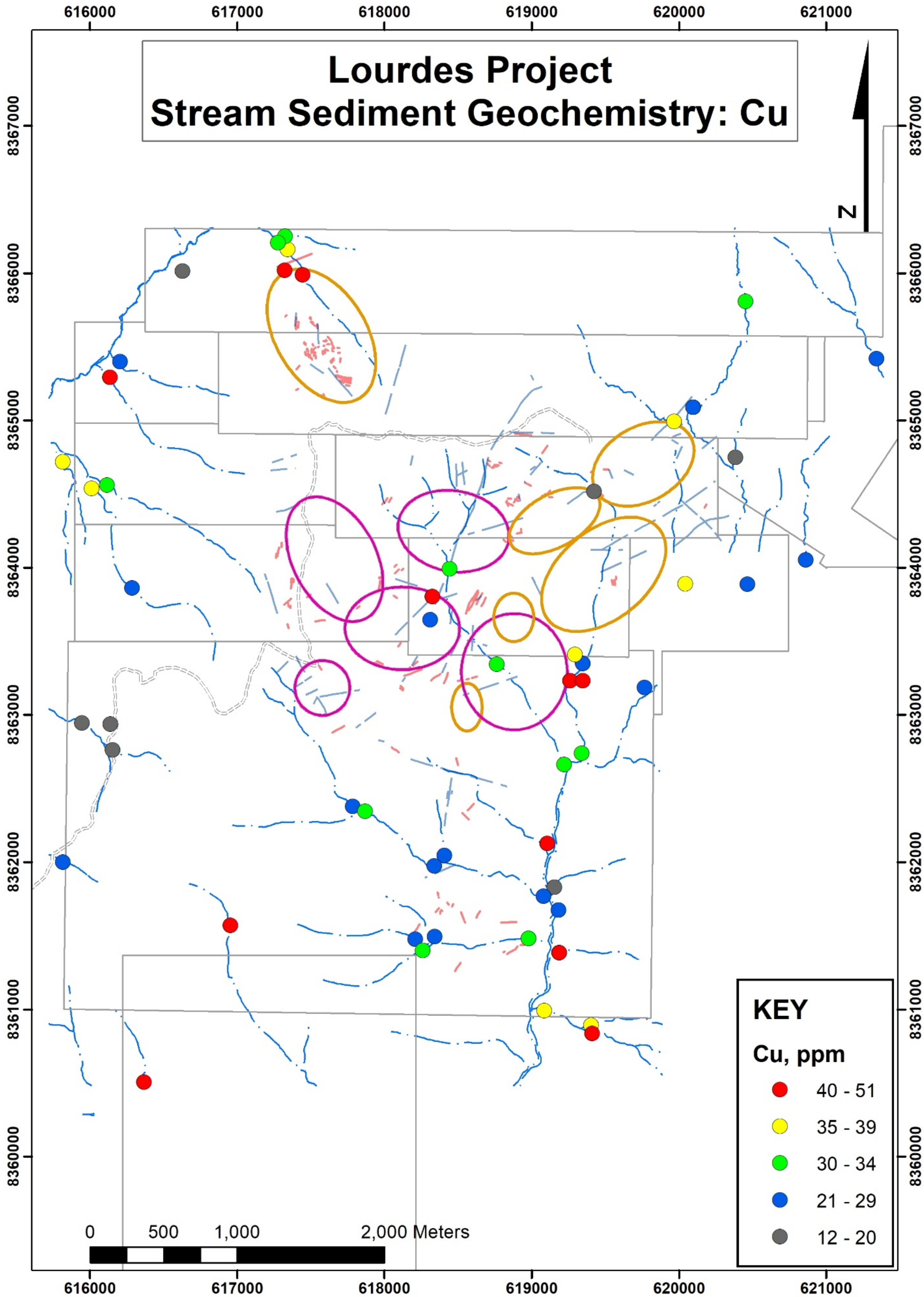

Lourdes Project
Soil Geochemistry: As
617000
618000
619000
620000
8366000
8365000
8364000
8363000
8362000
8361000
8,365,000 N
8,364,000 N
8,363,000 N
617,000 E
618,000 E
619,000 E
620,000 E
Corral Os
N
KEY
As, ppm
211 - 381
99 - 210
41 - 98
18 - 40
1 - 17
0
250
500
1,000 Meters

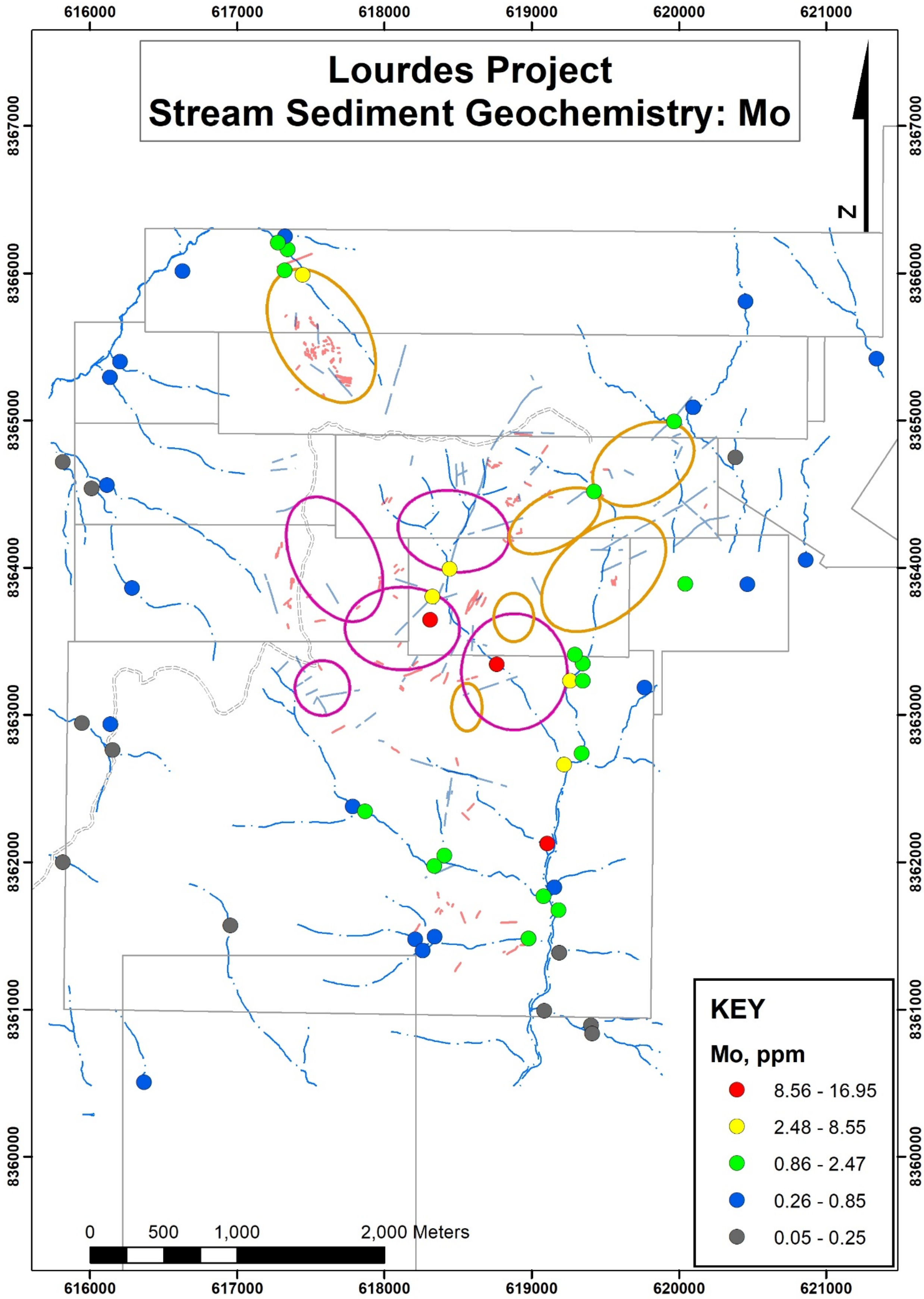

Lourdes Project
Soil Geochemistry: Cu
617000
618000
619000
620000
8366000
8365000
8364000
8363000
8362000
8361000
N
Corral Cls
KEY
Cu, ppm
82 - 150
55 - 81
39 - 54
26 - 38
5 - 25
0 250 500 1,000 Meters


Lourdes Project
Soil Geochemistry: Hg
617000
618000
619000
620000
8366000
8365000
8364000
8363000
8362000
8361000
8,365,000 N
8,364,000 N
8,363,000 N
Corral Os
KEY
Hg, ppm
0.711 - 9.410
0.401 - 0.710
0.221 - 0.400
0.111 - 0.220
0.005 - 0.110
0 250 500 1,000 Meters
N


Lourdes Project
Soil Geochemistry: Mo
617000
618000
619000
620000
8366000
8365000
8364000
8363000
8362000
8361000
N
KEY
Mo, ppm
69 - 510
32 - 68
13 - 31
7 - 12
1 - 6
0
250
500
1,000 Meters
Corral Cls

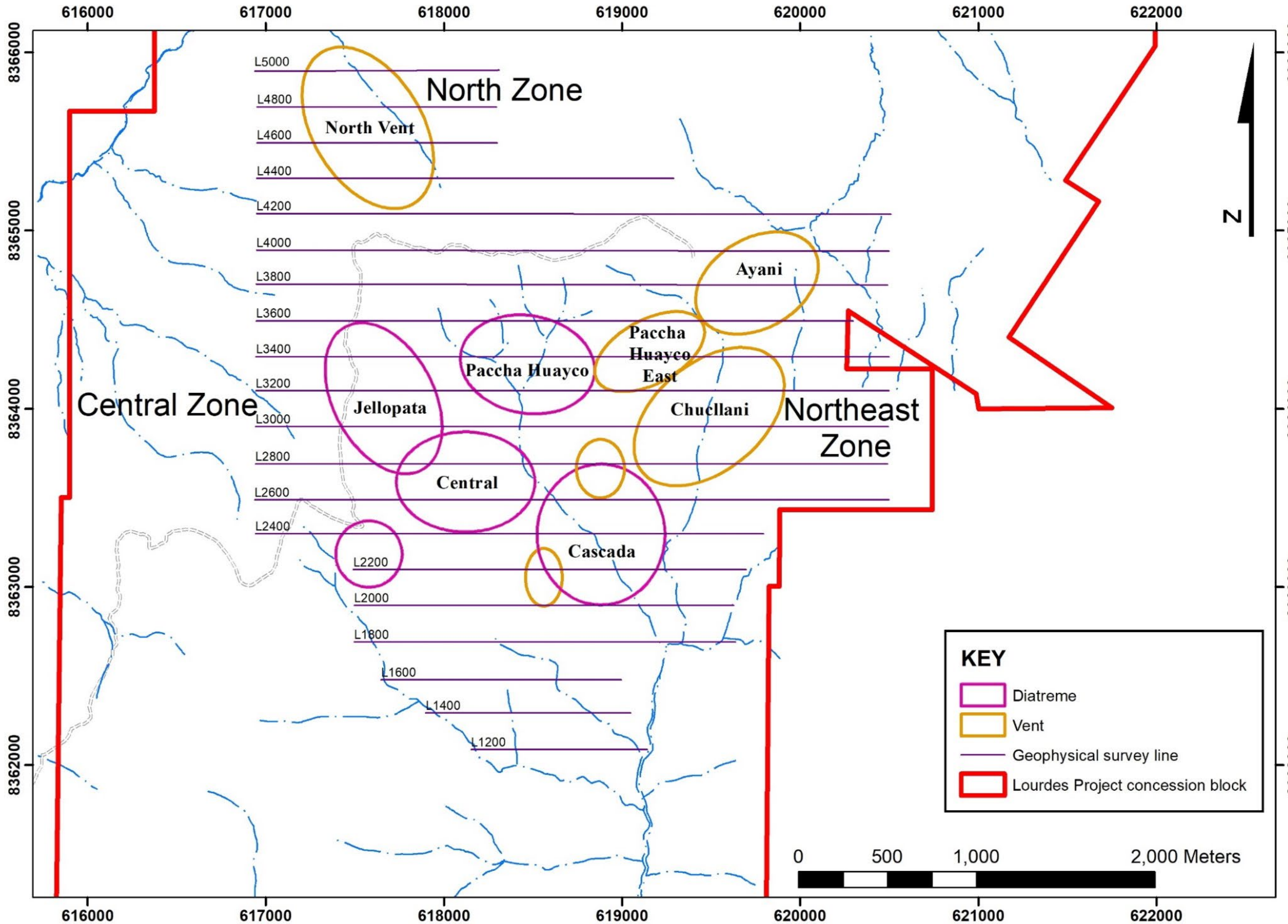

Lourdes Project
Stream Sediment Geochemistry: Au
N
616000
617000
618000
619000
620000
621000
8367000
8366000
8365000
8364000
8363000
8362000
8361000
8360000
0
500
1,000
2,000 Meters
KEY
Au, ppm
0.0049 - 0.0084
0.0028 - 0.0048
0.0016 - 0.0027
0.0001 - 0.0015
0.0000


Lourdes Project
Stream Sediment Geochemistry: Cu
616000
617000
618000
619000
620000
621000
8367000
8366000
8365000
8364000
8363000
8362000
8361000
8360000
N
KEY
Cu, ppm
40 - 51
35 - 39
30 - 34
21 - 29
12 - 20
0
500
1,000
2,000 Meters

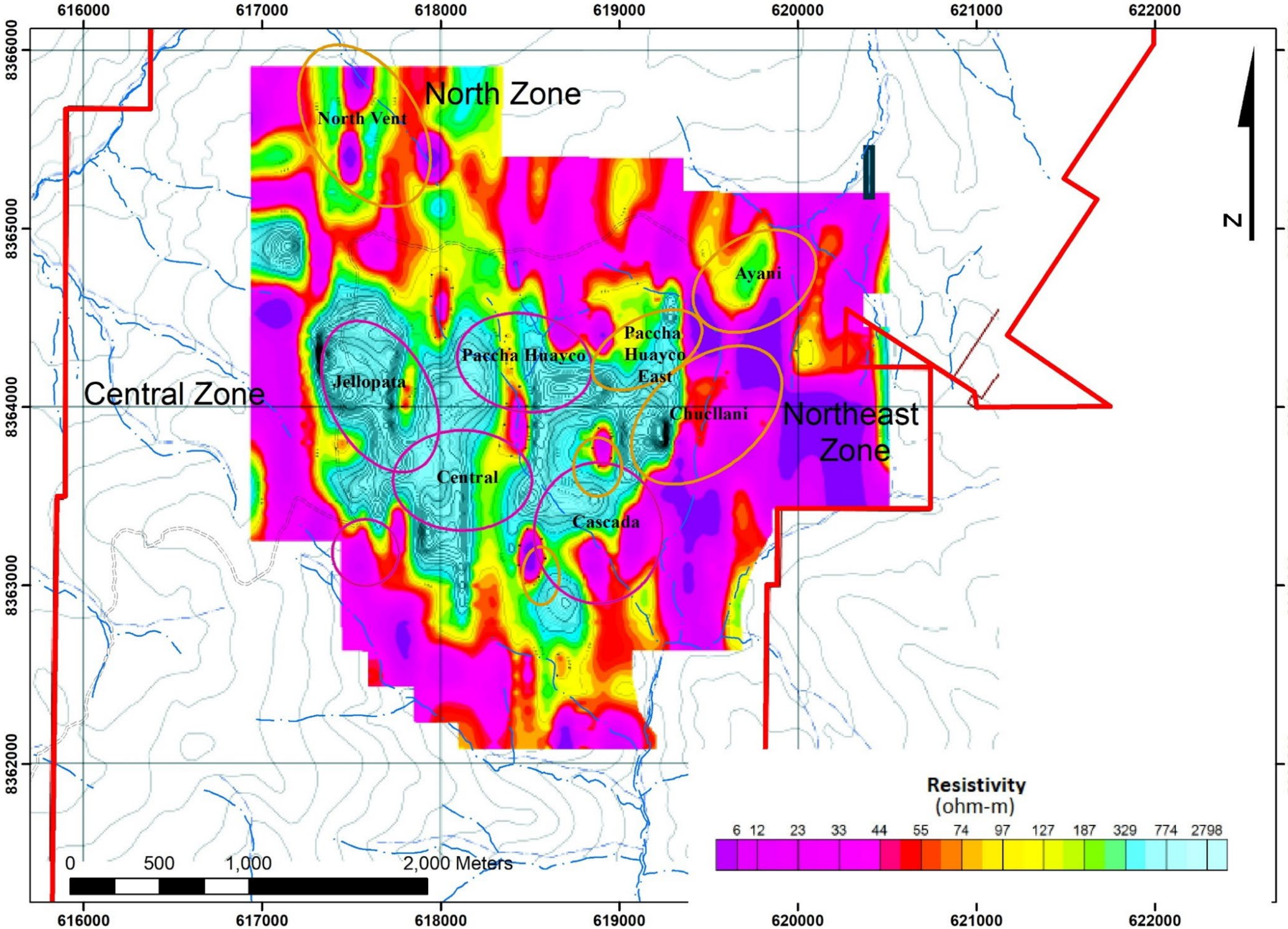

Lourdes Project
Stream Sediment Geochemistry: Mo
616000
617000
618000
619000
620000
621000
8367000
8366000
8365000
8364000
8363000
8362000
8361000
8360000
N
KEY
Mo, ppm
8.56 - 16.95
2.48 - 8.55
0.86 - 2.47
0.26 - 0.85
0.05 - 0.25
0
500
1,000
2,000 Meters

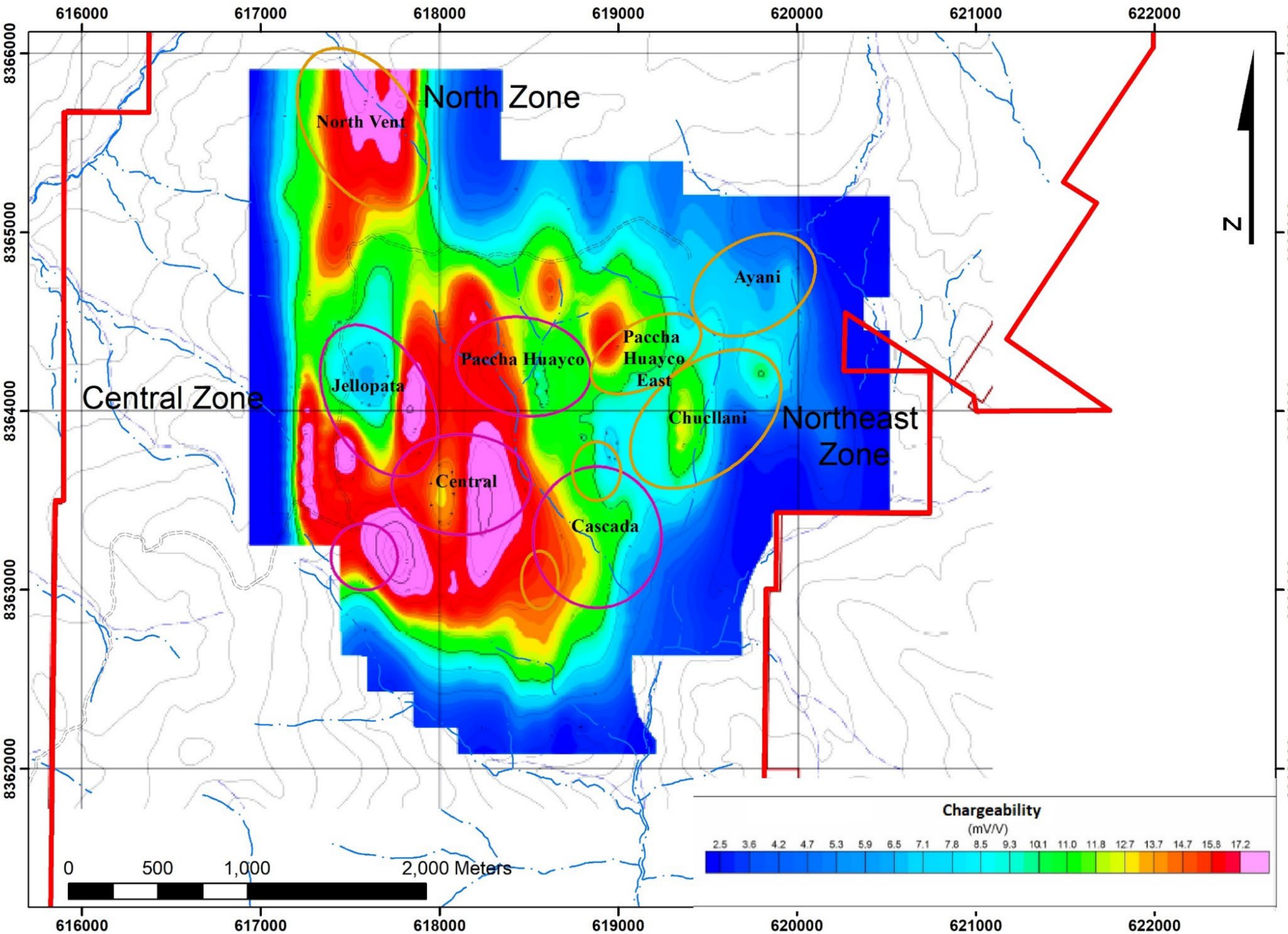
Appendix B:

Lourdes Project Geophysical Maps and Sections


616000
617000
618000
619000
620000
621000
622000
8366000
8365000
8364000
8363000
8362000
North Zone
North Vent
Central Zone
Northeast Zone
Ayani
Paccha Huayco
Paccha Huayco East
Jellopata
Chucllani
Central
Cascada
L5000
L4800
L4600
L4400
L4200
L4000
L3800
L3600
L3400
L3200
L3000
L2800
L2600
L2400
L2200
L2000
L1800
L1600
L1400
L1200
N
KEY
Diatreme
Vent
Geophysical survey line
Lourdes Project concession block
0
500
1,000
2,000 Meters

Appendix B-1: Chargeability and Resistivity Maps (level -130m)


616000
617000
618000
619000
620000
621000
622000
8366000
8365000
8364000
8363000
8362000
North Zone
North Vent
Central Zone
Jellopata
Paccha Huayco
Paccha Huayco East
Ayani
Chucllani
Northeast Zone
Central
Cascada
N
Resistivity
(ohm-m)
6 12 23 33 44 55 74 97 127 187 329 774 2798
0 500 1,000 2,000 Meters


North Zone
North Vent
Central Zone
Jellopata
Paccha Huayco
Paccha Huayco East
Ayani
Chucllani
Northeast Zone
Central
Cascada
Chargeability
(mV/V)
2.5 3.6 4.2 4.7 5.3 5.9 6.5 7.1 7.8 8.5 9.3 10.1 11.0 11.8 12.7 13.7 14.7 15.8 17.2
0 500 1,000 2,000 Meters
N
616000 617000 618000 619000 620000 621000 622000
8366000 8365000 8364000 8363000 8362000

Appendix B-2: Resistivity and Chargeability Cross Section

Resistivity (ohm-meters) **Chargeability (Mv/v)**