Chapter 4 Pululahua Area

Reginal geological survey was carried out in area of 90 km^2 for Phase II survey.

4–1. Geological Survey

4–1–1. Purpose and method of survey

The purpose of the survey is to study the geology of Pululahua area(90km^2) in order to clarify the ore–bearing circumstances. The important objectives in this survey is to clarify the outline of geological structure of this area and to summar–ize the characteristics of known ore deposit and the mineralized zones.

Before the survey, the topographic base map on a scale of one to ten thousand was made by enlargement the exsiting topographical map on a scale of one to twenty five thousand. The route map was also made based on this enlarged map. The routes of the survey were decided with careful examination of the existing data. The aerial photographs were fully used in the survey.

The geological plan map is shown in Fig. II–4–1 and Pl. II–4–1(1) and (2), Geo–logical profile in Pl. II–4–2 and generalized columnar section in Fig. II–4–2.

Samples for various tests were collected with careful consideration. Sampling points and the results of the tests are described in this report and shown also in Fig.II–4–3 and the appendix.

4–1–2 Geology

Geology of this area consists of volcanic rocks, sedimentary rocks and intru–sive rocks of Cretaceous System and Quarternary System.

(1) Stratigraphy

The stratigraphy of this area consists of Cretaceous System and Quarternary System. The Cretaceous System consists of Macuchi Formation(KM) and Yunguilla Forma–tion(K7) in ascending order. The Quarternary System consists of volcanic rocks and s edimentary rocks, the strata is talus deposits(tl), Pululahua volcanics(Hp), volcani c mudflow deposits(lh), Quangagua Formation(Qc), lake deposits( ), colluvial deposi ts( ), and fluvial deposits in ascending order.

(i) Cretaceous System

(a) Macuchi Formation

The Macuchi formation distributes approximately in the central part to the northern part of this area. The thickness of the Formation is more than 1,000m.

The Formation consists of andesitic volcanic breccia which is composed of coarse grained tuff to lappili tuff partly mainly and of fine grained tuff. The rock shows bluish green color, massive, compact and hard. The nature of the rock is hard. The internal structure of rock is indistinct because of massive without stratification.

This Formation is corresponded to the early to the middle of upper Cretaceous Period.(J.W.Baldock, 1982)

(b) Yunguilla Formation(K7)

The Yunguilla formation distributes stretching approximately from south to north in the western part of this area. The thickness of the Formation is presumed to be more than 500m. The formation consists of shale(K7s) and alternation of sandstone mainly, and of conglomerate with thin layers of sandstone and conglomerate, and of alternation of sandstone and shale.

The shale shows dark brownish to brownish color. The lithology is generally massive without stratification. Rhythmic stratification of 1 cm to 30 cm develops, however, in the marked part of alternation of sandstone and shale, and striped structure of 1cm to 20cm develops in the part of siliceous shale.

The alternation of sandstone and conglomerate(K7a) shows chocolate color to dark brownish and dark greyish color, and includes various colored and rounded pebbles and gravels. Grading of conglomerate to sandstone or siltstone well develops and forms alternation more than 30cm to 10m in thickness. The biggest grading of altern ation is sometimes more than 10m in thickness. The gravels consist of tuff, siliceous shale and chart, which diameter is less than 10cm, generally less than 3cm, and which matrix is muddy. Strong silicification is partly observed.

The strike is the N–S to the NE–SW. The dip is markedly steep and generally inclined eastward or westward. The strong folding is estimated, because the strata is reversed in the lower reaches of Rio Tanachi..

The age of this formation is later Cretaceous(Briston and Hoffstetter, 1977).

(ii) Quarternary System

(a) Talus deposits(tl)

This deposts distribute in the upper reaches of the main stream of Rio Tanachi and it's right side bank. The thickness of the strata is less than 50cm.

The deposits consist of various scales of subangular to angular gravels. The matrix consists of comparatively soft and pale brownish colored clay to granules. Reflecting the background geology, almost all the gravels are composed of tuff of Macuchi Formation and partly include the shale of Yungilla Formation. The internal structure of the deposits is indistinct, because of the massive without stratification.

The depositing epoch is decided to correspond to the lowest Quarternary, because of no Quarternary ash in the matrix. On the other hand, the deposition epoch might be still considered to be between the late Cretaceous during Yunguilla Formation or later and a age before the Pululahua volcanic activity.

(b) Pululahua Volcanics(Hp)

The rocks widely distribute in the central part to the eastern part of this survey area. The thickness of the formation is more than 600m.

The rocks consist of andesite lavas, andesitic pyroclastic rocks and volcanic ash. The andesite lava is greyish hornblende andesite. The marginal part of the lava flow shows auto–brecciated like features. Pyroclastic rocks and volcanic ash forms approximate horizontal stratification with ash including breccias and fine to coarse ash. However, the horizontal continuity is poor.

The microscopic observation(Tab.II–1–2) of typical rock is as follows:

Andesite(B1025)
Location : quarry in the south–eastern part of this survey area
Texture : porphyritic and intersertal
Phenocryst: plagioclase› hornbende
Groundmass: plagioclase› glass› opaque minerals

Pululahua volcanic rocks form the skelton of the existing geological structure of this area such as caldera and central lava dome.

By the chemical analysis of bulk rock of Pululahua volcanic rocks, they are classified in the calc–alkaline rock series.

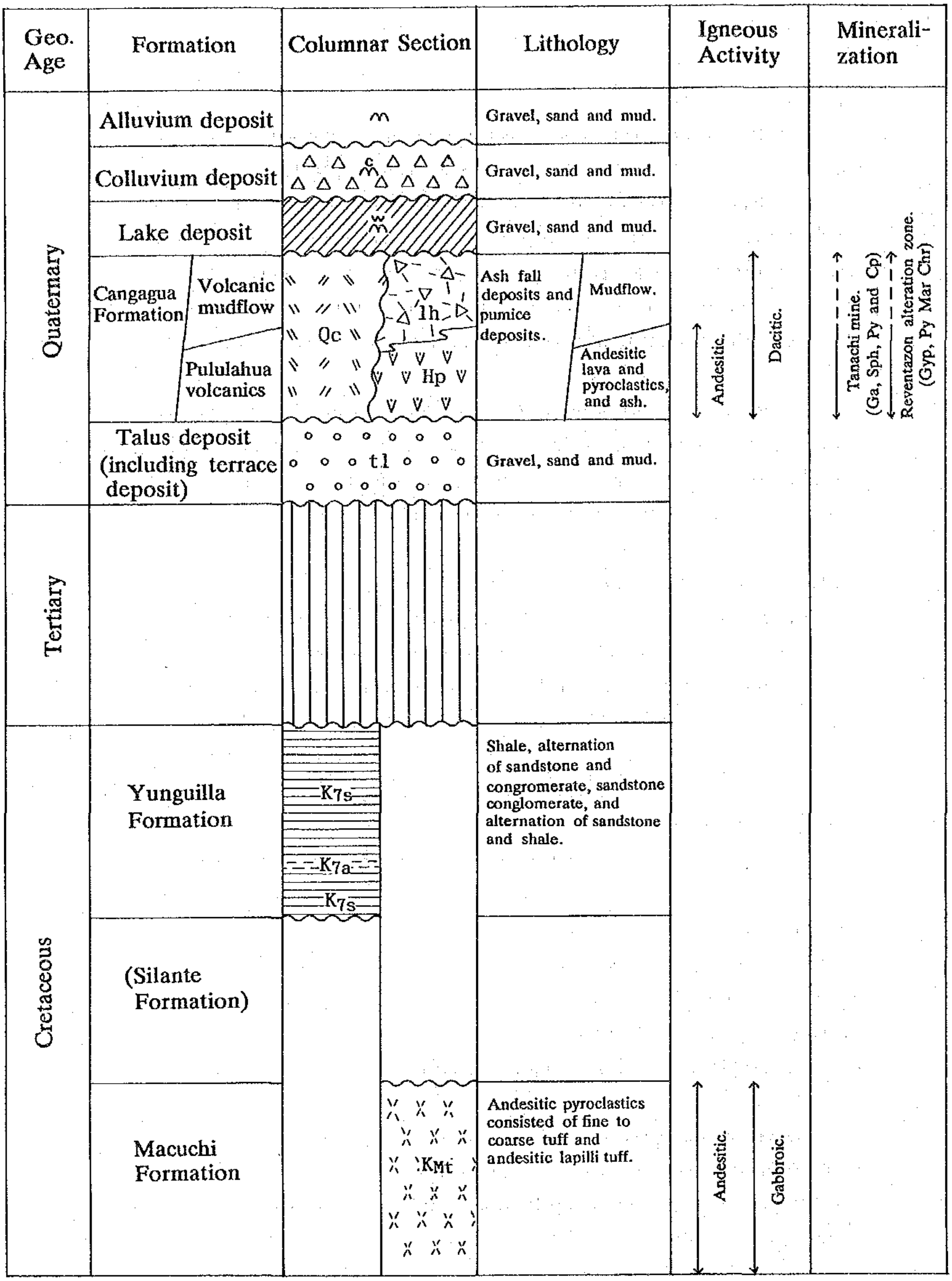
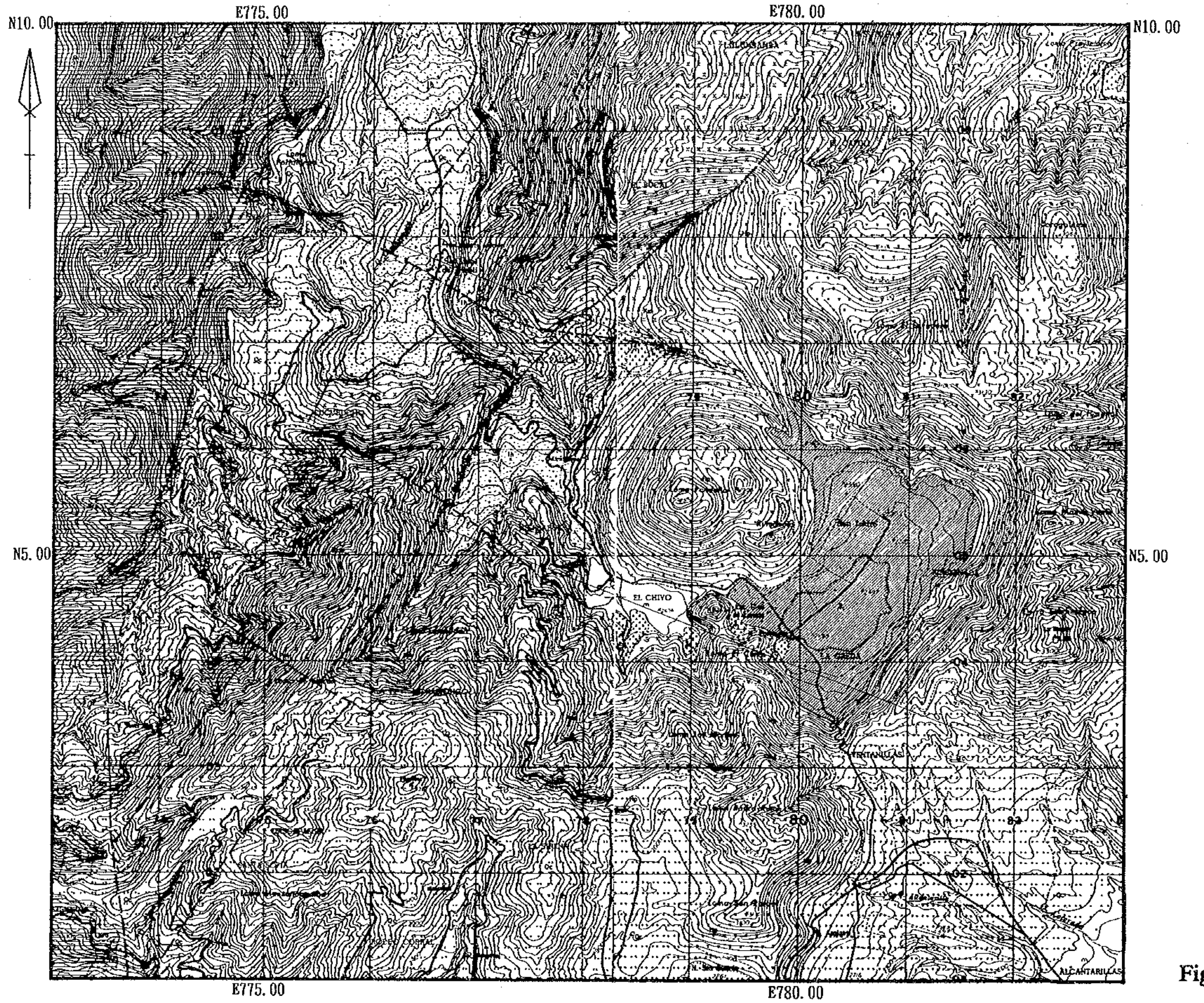


Fig.II–4–2 Generalized columnar section of the Pululahua area



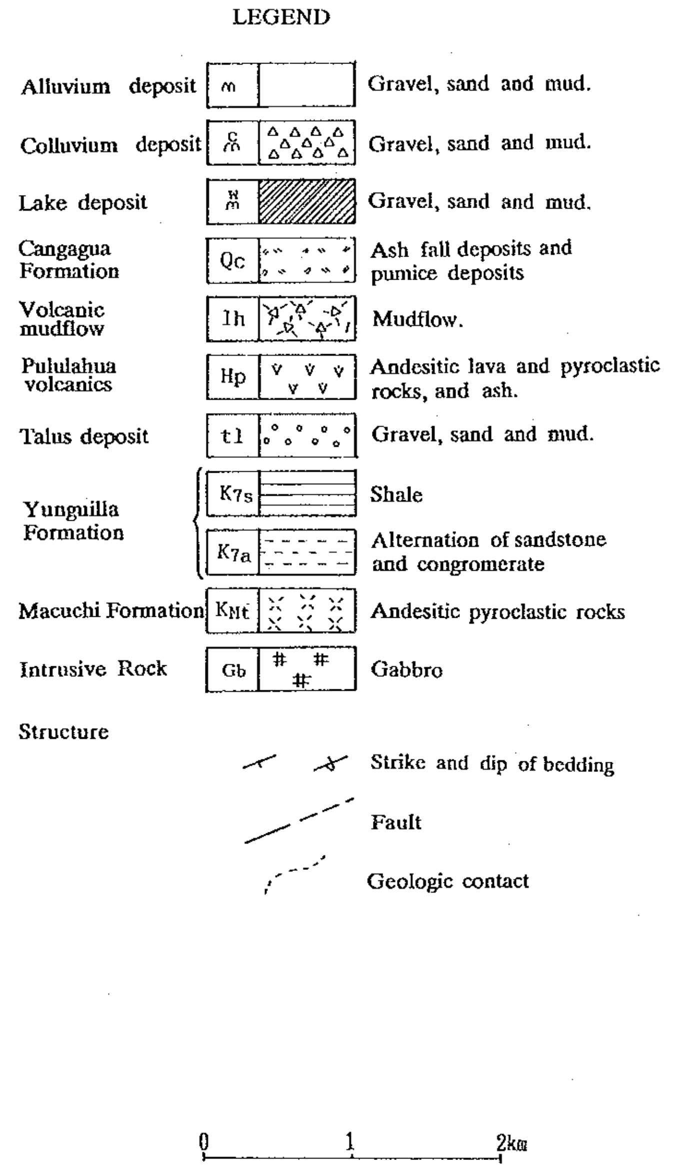
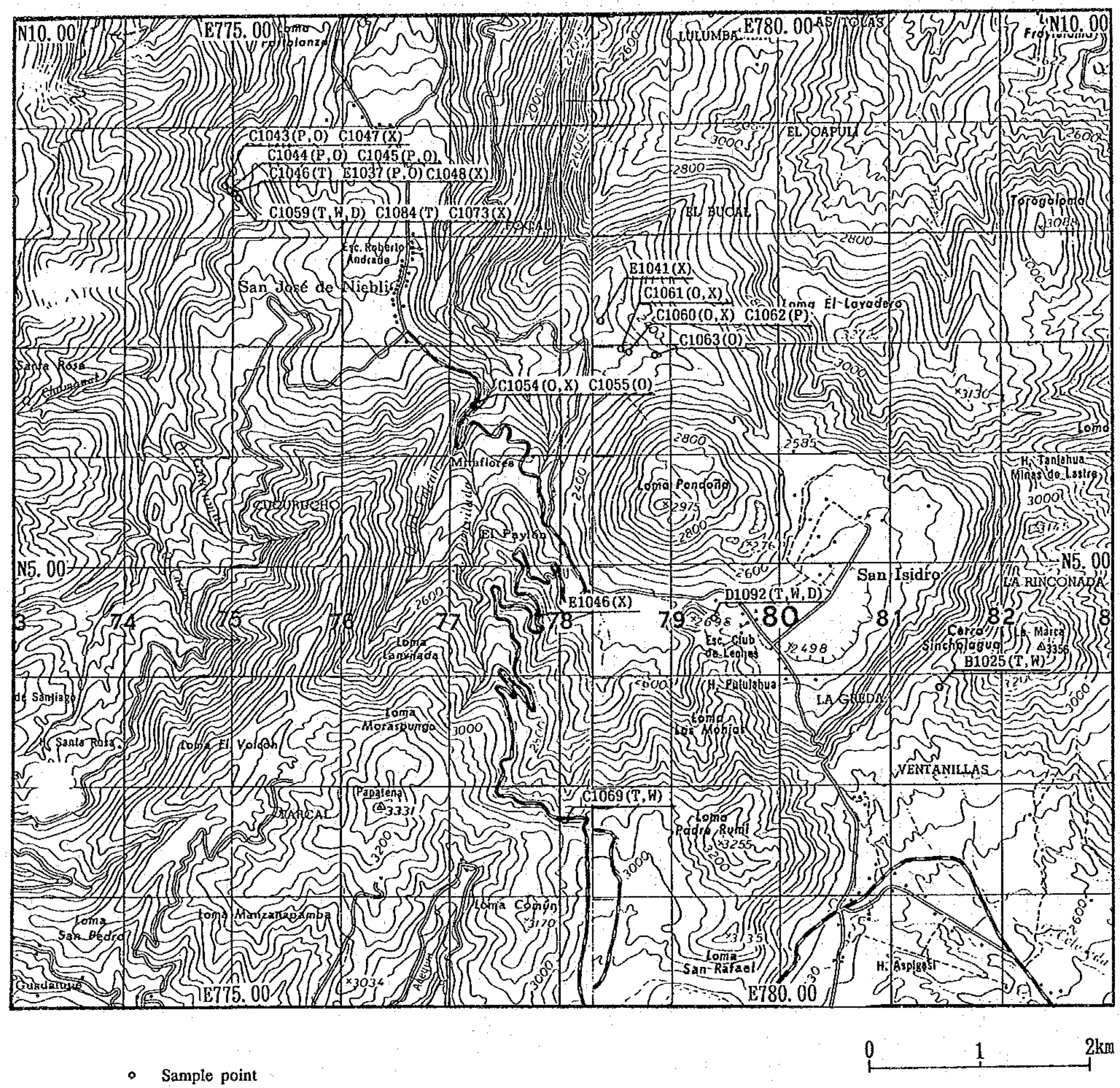


Fig.II–4–1 Geologic map of the Pululahua area



○ Sample point

T : Thin section
X : X-ray diffraction analysis
D : K-Ar dationg
W : Whole rock analysis
P : Polished section
O : Ore analysis

Fig.II-4-3 Location of samples for laboratory tests

The isotope age determination of andesite which forms central lava dome of Pululahua volcano(D1092) shows 0.8 Ma. The age is corresponded to the Alluvium of Quarternary.

(c) Volcanic mudflow deposit(lh)

The deposits distribute in the central part to the north–northwestern part of this survey area. The thickness of the Formation is presumed to be about 200m.

This deposit(lh) is composed of various scales of gravels and matrix of angular to subangular breccias. The gravels are andesite of Pululahua volcanics, which are generally 1 cm to 10 cm in diameter. The blocks of 5 m in diameter are, however, sometimes observed. The matrix is fine to coarse grained volcanic ash.

The dip is horizontal to gently inclined toward NW. The deposit is presumed to be the erupted material of Pululahua volcano which repeatedly flew down buring the valley toward the direction of NNW.

(d) Cangagua Formation(Qc)

The Cangagua formation distributes widely in the southern part of this survey area. The thickness of the Formation is presumed to be less than 30m. This Formation consists of greyish ash and pumise fall deposit accompanied with the dacitic volcanic activity. It is considered to be areal fall deposit, because the extensive distribution of ash covers the lower layers of old topography.

(e) Lake deposit( )

The Lake deposit distributes in the lowland within the old crater in the eastern part of the central dome of Pululahua volcano. It consists of garavels, sand and clay which deposited in the crator lake.

(f) Colluvial deposit( )

The Colluvial deposit distributes in the caldera of Pululahua volcano.

The distribution area of the deposit is extensive in the northern part of the central dome of Pululahua volcano. The rock masses of the Reventazon alteration zone distributes up to the Rio Blanco in the western part of the area. It is considered to be the secondary deposit due to collapse of slope, therefore, it includes various sizes of gravels.

(g) Fluvial deposit.

The Fluvial deposit distributes within the caldera, in the south–eastern part of the area and in the rivers of this area.

(2) Intrusive rocks

The intrusive rocks in this area show dyke form of Gabbro (Gb).

The Gabbro distributes in the caldera wall of the southern part of Pululahua volcano and intrudes into Macuchi Formation. The rock shows greenish grey color and is holocrystalline massive.

The microscopic observation(Tab.II–1–2) of this rock is as follows;

Gabbro(C1069)
Location: La Sirena, the southern part of this survey area
Texture : equi–granular
Main mineral composition : plagioclase› monoclinic–pyroxene› opaque minerals
Altered minerals : chlorite› calcite› epidote

The epoch of intrusion of this rock corresponds to the same epoch or later of depo–siting of Macuchi Formation of Cretaceous Period.

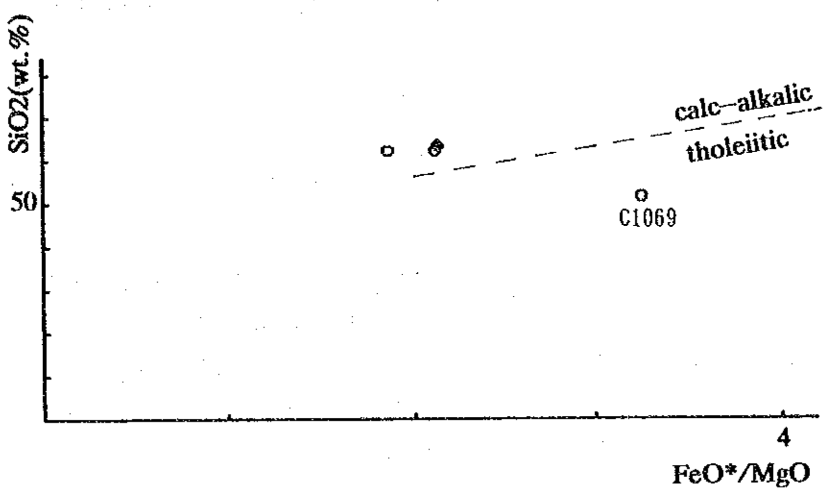
The chemical analysis of bulk rock of Gabbro, andesite lava of Pululahua volcanic rocks, and andesite boulder in mud–flow deposit of Pululahua volcano is shown on Tab.II–1–1. The chemical variation diagram: (FeO^*/MgO)–SiO_2 and (FeO^*/MgO)–FeO^* are shown in Fig.II–4–4. As the result, Gabbro is clssified in tholeiitic rock series, while the other are into calc–alkalic rock series.

4–1–3. Geological structure

Lineaments, faults and volcanic caldera are observed as geological structures in this area.

(1) Lineament

As the result of the interpretation of aerial photographs, many lineaments which are comparatively long and distinct are observed in this area. The direction of them are NE–SW and WNW–ESE. Most of the lineaments distribute in the western to



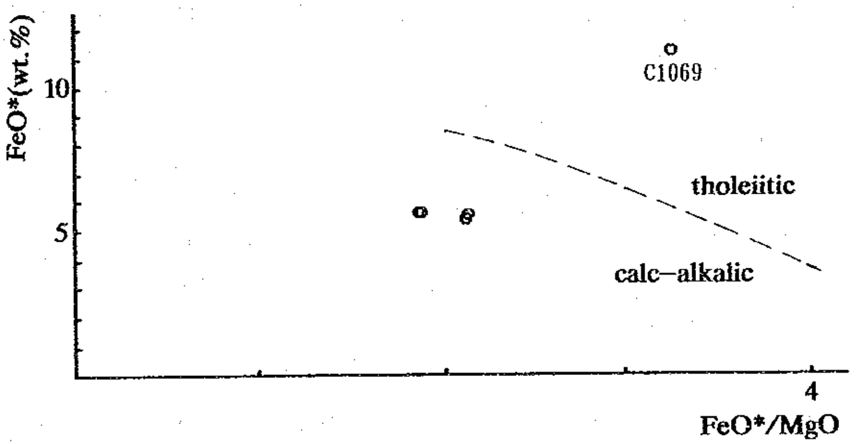


Fig.II–4–4 Chemical variation diagram:(FeO*/MgO)–SiO2 and (FeO*/MgO)–FeO* north–western area where Macuchi Formation and Yunguilla Formation distribute. There are less lineaments in the eastern to the south–eastern area where coverd by Quaternary System. Short but comparatively distinct lineaments are recognized around the caldera of Pululahua volcano.

(2) Fault

Two faults of the NNE–SSW and the NE–SW direction, and three faults of the NW–SE to the WNW–ESE direction are recognized in this survey area.

One of the former faults extends from the right side of the upper reaches of Rio Tanachi in the south–western area to the lower reaches of Rio Blanco in the north–central area, bordering Macuchi Formation and Yunguilla Formation. The direction of strike of Yunguilla Formation is NNE–SSW to NE–SW and shows strong folding.

The existance of large structure of the direction of N–S to NE–SW is estimated, because Yunguilla Formation contacts Macuchi Formation without lower layer of Silante Formation. Near the south–western end of this area, fall ash of Cangagua Formation distributes across the existing topography along the fault near the estimated fault, and valley topography is presumed to had been there along the fault in early Quarternary.

The existance of another fault is considered from Agua Amarilla in the south–western area to Q.Reventazon through the north–western skirt of Pululahua volcano.

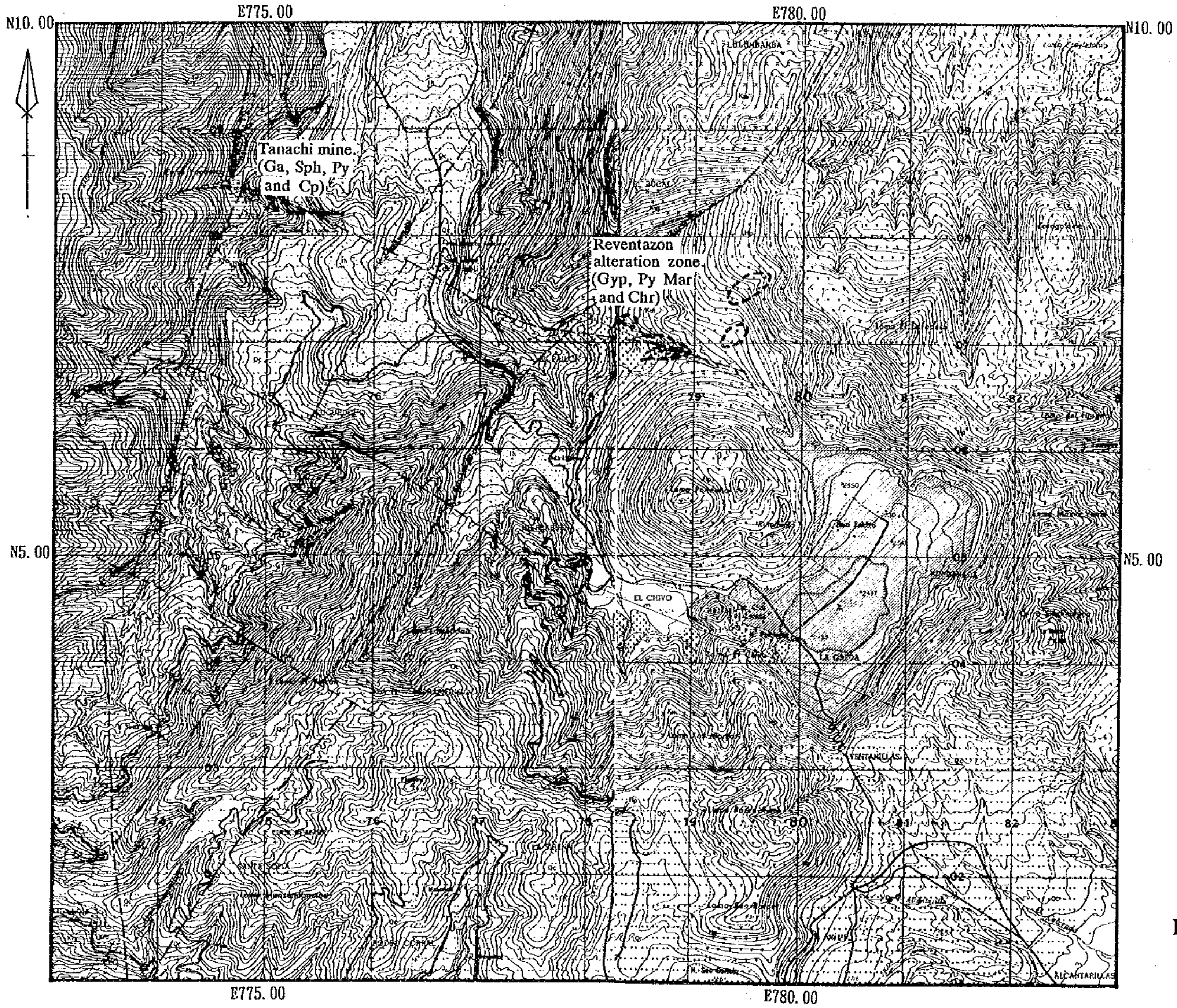
The latter fault(the direction of NW–SE to WNW–ESE) intersects Macuchi Formation and Yunguilla Formation, and crosses the former fault(the direction of NNE–SWW to NE–SE).

(3) Volcanic caldera

The volcanic activity of Pululahua volcano in Quarternary Period formed the existing geology and topography such as collapse and the central dome due to the formation of caldera.

4–1–4. Mineralization and alteration

Tanachi ore deposit and Reventazon acidic alteration zone can be pointed out as known two ore deposits and alteration zones in this area. There are other alteration zones, which situate about 2 km southwest and about 1 km west of Reventazon acidic alteration zone, and which arerecognized to be similar to the alteration zone described later (Fig. II–4–5).



LEGEND

Alluvium deposit	m	Gravel, sand and mud.
Colluvium deposit	c m	Gravel, sand and mud.
Lake deposit	l m	Gravel, sand and mud.
Cangagua Formation	Qc	Ash fall deposits and pumice deposits
Volcanic mudflow	lh	Mudflow.
Pululahua volcanics	Hp	Andesitic lava and pyroclastic rocks, and ash.
Talus deposit	tl	Gravel, sand and mud.
Yunguilla Formation	K7s	Shale
	K7a	Alternation of sandstone and conglomerate
Macuchi Formation	KMt	Andesitic pyroclastic rocks
Intrusive Rock	Gb	Gabbro

Structure

- Strike and dip of bedding
- Fault
- Geologic contact

Mineralization and Alteration zone

- Tanachi mine.
- Vein and veinlet
- Hydrothermal alteration zone

0 1 2km

Fig.II-4-5 Mineralized and alteration zone map of the Pululahua area

(1) Tanachi ore deposit

The Tanachi ore deposit locates along the branch of Rio Tanachi in the north-western part of this survey area.

There are four old drifts in this ore deposit within the section of 150m arranged the direction of NW. Three of the drifts collapsed, the inside of the mine can be observed in one drift (Fig. II–4–6). The roof and floor are bordered with clay which is more than 70cm thick include various sizes of sub–rounded gravels to sub–angular breccias of 1cm to 5cm in average diameter(the maximum diameter is 15cm). Gravels *more than 1m in diameter are included in the clay layer according to the docum*ents. The minaral compositions of the gravels are galena–zincblende–chalcopyrite–quartz, pyrite–chalcopyrite–quartz, chloritizated–silicificated–pyritizated rock (Macuchi Formation), argillizated–chloritizated rock(Yunguilla Formation) and coarse grained silicificated–pyritizated rock(Quarternary andesite).

The microscopic observation of coarse grained silicificated–pyritizated rock (Quarternary andesite) is as follows;

Coarse grained silicificated–pyritizated rock(C1084)
Location : Tanachi mine
Texture : porphyritic
Phenocryst: plagioclase› hornblende
Groundmass: unknown
Altered minerals: secondary quartz› calcite› chlorite› epidote›
sericite› opaque minerals

Coarse grained silicificated–pyritizated rock is presumed to have been Quarternary andesite(C1084) which was strongly altered. Therefore, it shows porphyritic texture with plagioclase and hornblende phenocrysts. On the other hand, fresh andesite of Pululahua volcanic rocks also shows porphyritic texture with plagioclase and hornblende phenocrysts. Therefore, this altered rock(C1084) is presumed to originate from the andesite of Pululahua volcanic rocks.

The isotope age determination was carried out for andesitic the rock of small central dome. The result is under 0.8 Ma(Tab.II–1–2). The age of mineralization of the Tanachi deposit is considered to be that of Quaternary.

The matrix of this ore deposit consists of white clay. The altered minerals such as sericite/montmorillonite mixed layer, kaolinite and quartz were identified

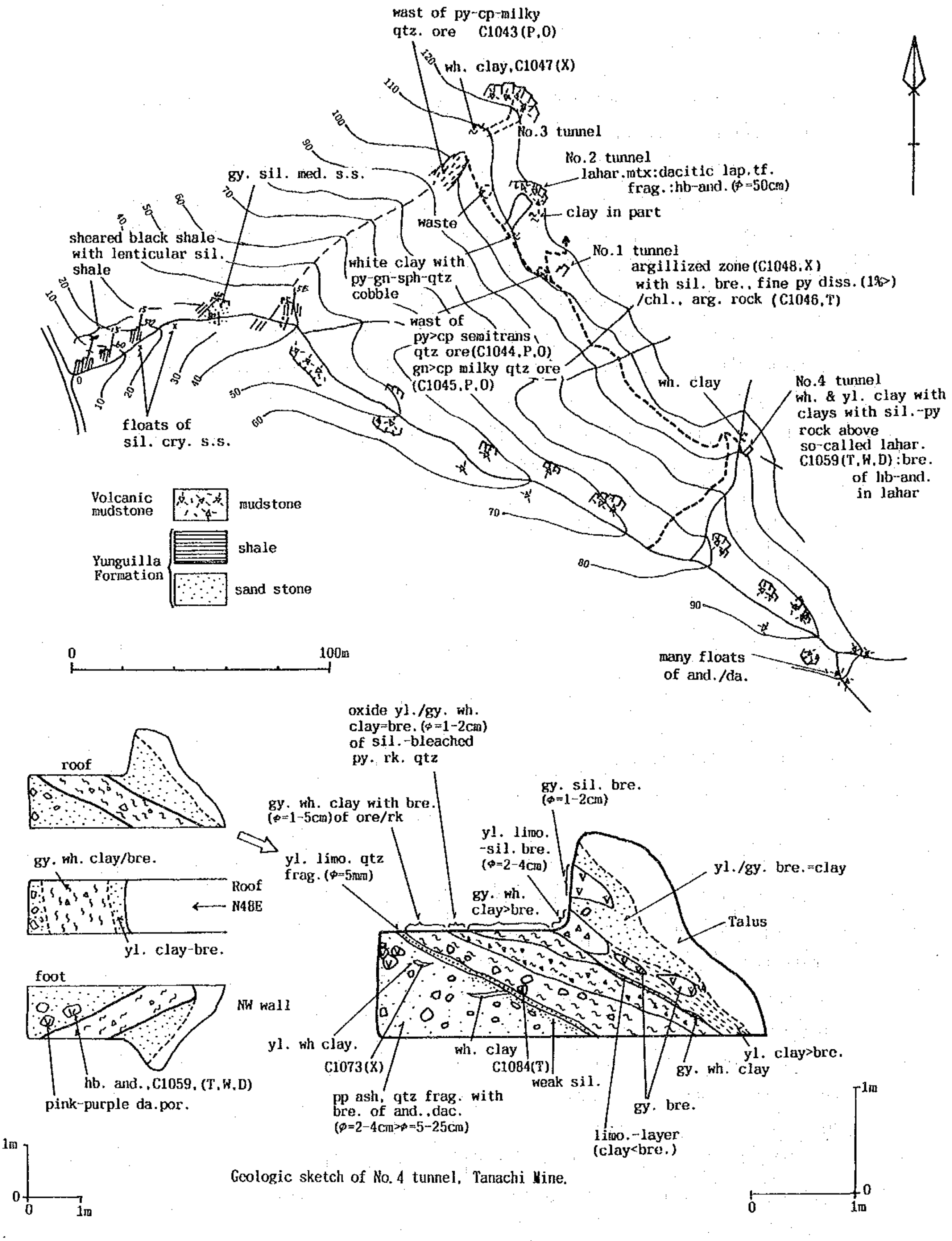


Fig.II–4–6 Sketch of the mineralized part of the Tanachi mine

with powderly X-ray diffractive analysis. The alteraed mineral assemblage identified the one which is recognized in the alteration zone relating with the acidic hydrothermal alteration activities.

By the microscopic observation of ore minerals(C1043, C1044, C1045, C1037), chalcopyrite, galena, sphalerite and pyrite are observed as ore minerals, and quartz as gangue mineral. Those minerals show fractured and/or brecciated texture.

By chemical analysis of the slime(C1043, C1044, C1045, C1037) from the old drift, the following grades are obtained; 0.3g/t to 1.7g/t Au, 182.5g/t to 52.3g/t Ag 3.99% to 0.57% Cu, 9.34% to 0.06% Pb, and 24.8% to 0.08% Zn.

(2) Reventazon acidic alteration zone

This alteration zone locates in the central part of this area. Six alteration zones of 100m to 500m are recognized including secondary moved alteration zone within the area of 1km square. These alteration zones are initially accompanied with pyrite of dissemination and network of pyrite-limonite-malachite-gypsum-white clay(kaolinite) in brecciated andesitic tuff of Macuchi Formation which is accompanied with strong silicification-chloritization. It is so-called acidic hydrothermal alteration zone. Hydrothermal breccias are observed at three places and sulfur sinters are also observed at two places.

Altered minerals such as kaolinite, pyrophyllite, quartz and gypsum were identified in this altered zone (samples C1060 and C1061) by X-ray diffraction method. In addition to these minerals, montmorillonite and anhydrite were also recognized (Appendix 3).

The mineral assemblage of these minerals identified are recognized in the alter ation zone which is considered to be associated with acidic hydrothermal activities.

Chemical analysis of pyrite-gypsum ore was carried out. As the result, the contents of Cu, Pb, Zn, Mo, Au and Ag were all less than the detectable limit (Appendix 4).

(3) Other alteration zones

The alteration zones, which are similar to Reventazon acidic alteration zone, are located in the following places:

1) about 2 km southwest of the Reventason acidic alteration zone

2) about 1 km west of Reventazon alteration zone.

By X-ray diffraction method of the samples from each alteration zone, quartz, chlorite and calcite were identified for the sample of (C1054) of alteration zone

1) mentioned above and kaolinite, quartz, goethite and hematite were for (E1046) of alteration zone 2) mentioned above, respectively.

By chemical analysis of samples(C1054, and C1055), the grade of the ore was as follows; under 0.1g/t Au and under 0.1g/t Ag, under 0.01% Cu, 0.02% to under 0.01% Pb, 0.04% to under 0.01% Zn, and under 0.01% Mo.

4–2. Discussion

Tanachi ore deposit is aggregates of breccias with ore minarals and argillizated layer of more than 70cm put between mudflow deposit.

The estimated metallogenesis of Tanachi ore deposit by the geological features of Reventazon acidic alteration zone is as follows:

The metallogenic epoch is presumed to be Quarternary by the following reasons;

1. the floor of ore deposit includes mudflow deposit with the breccias of Quarternary andesite, and
2. includes breccias of coarse–grained silicificated–pyritizated rocks(Quarternary andesite ?).

The mechanizm of mineralization and metallogenetic process is considered on thefollowing reson mentioned below that the hydrothermal solution with metals such as Pb–Zn–Cu rose along the fracture of the direction of NW–SE, and rised the metal components precipitated as sulfide minerals(so–called supergene deposit) initially, then the deposit moved by subsidence with volcanic activity, collapse and landslide secondarily. It is presumed, consequently, that the form of primary deposit was not able to be preserved.

1) The mineral assemblage identified in this mineralized and alteration zone is the same as that of the acidic alteration zone
2) The texture of ore and gangue minerals is obseved to be fructured and brecciated

PART III CONCLUSIONS AND RECOMMENDATIONS

Chapter 1 Conclusions

(1) *Geology of Junin area*

Geology of Junin area consists of Apuela--Nanegal batholith of granodiorite and stock or dike of quartz porphyry and diorite porphyry, which intrude into batholith of granodiorite (Figs.II–1–1 and II–2–1). Lineaments were also analyzed to radiate outlying section of the drainage system from the Junction of Q. Limonita and Q. Crysocola.

(2) Mineralization and alteration in the Central Zone of Junin area

Mineralized and alteration zones in this Zone were clasified in three types based on their occurrences: Type I, Type II and type III (Tables II–4–1 and II–1–12, and Fig.II–1–3).

Type I occured mainly in the granodiorite around stocks or dikes of quartz por–phyry. Mineralized zones, which are characterized by Cu–Mo mineral dissemination (› network of quartz stringers with sulfides), disributed in the down stream of Q.Limon ita and in the middle to down stream of Q.Verde, accompanied with phyllic alteration zone. The assay result of ore samples were 1.35 % Cu and 1.44 % Cu respectively.

Type II were recognized in various zones such as the up stream of Rio Jinin, *the up stream of Q.Limonita, the Q.Crisocora, the down stream of Q.Controvercia* and the up atream of Q. La Rica. Type II, which occured as veins composed of as same ore mineral assembly as Type I, was divided into two sub–type Type IIA and Type IIB on their occurrences.

1) Type IIA : abundant in ore minerals which was scattered in clay, principal gangue mineral.
2) Type IIB : quartz veins with ore minerals.

Both phyllic and potassic alteration zones were identified along the vein contacts. The assay results of ore samples were as follows: 0.3 g/t Au, 137.2 g/t Ag and 42.42 % Cu for Type IIA of Q.Limonita; 0.1 g/t Au, 4.6 g/t Ag, 2.17 % Cu and 0.97 % Mo for Type IIB of Rio Junin mineralized zone.

Type III was observed to be as acidic alteration zone being accompanied with networky quartz veins.

The distribution of these three types of mineralized zones are summaried as follows: The Type I dominates in the Central Zone and extends southeastward and northeastward; Type II dominates in the Central Zone mainly and extends northwest–ward and southeastward, further to the Surrounding Zone of Junin area; and Type III is limited in the eastern half of the Central Zone.

(3) Drilling survey

Drilling Hole No. MJJ–1, which was carried out in the western edge of the Q.Limonita mineralized zone and drilled down to 151.50 m in depth. The MJJ–1 revealed that the lower part of the hole intersected and corresponded to the marginal section of the Q.Limonita mineralized zone.

(4) Mineralization in the Surrounding Zone of Junin area (Fig.II–2–3)

The Q.Espelanza mineralized zone, which was proved to be similar to type IIA and Type IIB of the Central Zone, were accompanied with phyllic alteration zone. Ore grade assayed was as follows: 0.6 g/t Au, 784 g/t Ag, 20.97 % Cu and 0.28 % Zn.

The Q. Fortuna mineralized zone was recognized to be similar to the Type I and the Type IIA of the Central Zone. A section corresponding to the Type I was accompanied with phyllic alteration zone and graded to be 8.3 to 1.1 g/t Ag, 2.68 to 0.33 % Cu and 0.09 % Mo or under, while the other section corresponding to Type IIA was assayed to be 0.2 g/t Au or under, 3.5 to 1.8 g/t Ag and 1.26 to 0.37 % Cu.

In the Q.Cristal branch alteration zone, several mineralized sections were recognized to be corresponded to Type I and Type IIB defined in the Central Zone.

(5) Result of geochemical exploration

As the results of rock geochemical exploration in the Central Zone of Junin area, the zoning of alteration mineral assemblage was proved precisely to be reflected on the distribution of geochemical anomalous zones which were corresponded also to each mineralized zones respectively (Figs.II–1–7 and II–1–8). For instance, Cu–Mo geochemical anomalous zone was centered on a intense mineralized zone, on the other hand Pb–Zn anomalous zones were distributed generally in surrounding part of each mineralized center.

The Au–Ag anomalous zone was suspected only to show a vague relationship with mineralized zone. Every Au–Ag anomalous zone over 10 ppm of Au was, anyhow, delineated within the Type III acidic alteration zones.

Cu–Pb–Zn geochemical anomalies were detected by stream sediments in areas corresponding to the mineralized outcrops along the Q.Limonita, the Q.Fortuna, and a branch of the Q.Cristal of the Surrounding Zone of Junin area (Fig.II–2–6).

(6) Cuellaje area

Geology of Cuellaje area consists mainly of the Apuela–Nanegal batholith of granodiorite, and stocks or dikes of andesitic porphyry, dioritic porphyry and/or quartz porphyry, which intrude the batholith (Fig.II–3–1).

The Rio Magdarena mineralized zone was accompanied with a zonal structure of three alteration mineral assemblages: the potassic alteration zone; the phyllic alteration aone; and propylitic alteration zone in outward order.

The assay result of ore samples there was 5.2 g/t Ag, 1.66 % Cu and 0.11 % Mo. These mineralized zones could be comparable in extension and intensity with those of the Central Zone of Junin area.

The Q.San Miguel mineralized zone was observed to be surrounded by the propylitic alteration zone.

Both the Rio Cristopamba mineralized zone and the mineralized zone between Rio Magdarena and Q.San Miguel contain Type II zones which are accompnied with contact zonal alteration in the vicinity of veins: the phyllic alteration zone at the central part, the propylitic alteration zone outwards.

The assay results of the Rio Cristopamba and the Q.San Miguel mineralized zones were as follows: 45.6 to 6.3 g/t Ag, 6.97 to 1.43 % Cu and 0.13 % Mo; 0.4 g/t Au, 36.5 g/t Ag, 7.98 % Cu and 0.03 % Mo respectively.

(7) Pululahua area

Geology of Pululahua area consists of the Cretaceous Macuchi formation (andesitic coarse tuff mainly), the Cretaceous Yunguilla formation (mudstone mainly), the Quaternary Talus breccias, Pululahua volcanic explosions, its mud–flow, and its detritus falls (Fig.II–4–1).

There are two areas of interest for prospect in this area, which are known as the Tanachi deposit and the Reventazon alteration zone.

The Tanachi deposit, which situates in the northwestern part of the area, occurs as secondary deposit of ore breccias. These ore breccias were supposed to be derived from polymetallic epithermal deposits formed in Quaternary age associating with the acidic hydrothermal activities, and to be transported possibly by landslide movement.

The assay result of ore samples obtained from waste stock pile in the Tanachi mine was 1.7 to 0.3 g/t Au, 182.5 to 52.3 g/t Ag, 3.99 to 0.57 % Cu, 9.34 to 0.06 % Pb and 24.8 to 0.08 % Zn. The Rebentazon acidic alteration zone situates in the central part of the Pululahua ara. The assay result of ore was under detectable level.

Chapter 2 Recommendations for Phase II survey

Junin and Cuellaje areas were proved to have high potential of Cu–Mo dissemination and vein deposits. Followings are, therefore, recommended for Phase II survey.

(1) Central Zone of Junin area (Fig.2–1)

According to the steep topography, it is difficult to adopt the geophysical exploration. Drilling survey is, consequently, commended although a transportaion ploblem needs to be solved.

Taking the movilization of diamond drilling machine into consideration,the recommended order of drilling survey is as follows:

1) Q.Limonita mineralized zone (Type I)

2) An area between Q.Limonita and Q.verde mineralized zones (Type I)

3) Rio Junin mineralized zone (Type II)

A detailed geological survey is, furtheremore, recommended to be carried out in the area of Q.Verde mineralized zone (Type I) and mineralized zones of Q.Limonita up stream, Q.Crisocora, Q.Controvercia and Q.La Rica (Type II) in order to delineate promissive mineralized zone for future drilling survey.

(2) Surrounding Zone of Junin area (Fig.2–2)

To correlate mineralization between Central Zone and Surrounding Zone of Junin area, detailed geological survey and geochemical exploration are recommended to be carried out in the three mineralized zones, Q.Espelanza mineralized zone, Q.Fortuna mineralized zone, and Q.Cristal branch mineralized zone.

(3) Cuellaje area (Fig.2–3)

Detailed geological survey, rock geochemical exploration, and geophysical exploration are recommended to be carried out in Rio Magdarena mineralized zone and a limited area between Rio Cristopamba and Q.San Miguel mineralized zones.

The reason of recommendation is as follows:

–Topography in Cuellaje area is comparatively gentler than that of Junin area, geophysical exploration method should be adoptable consequently.

–Occurrence of mineralization here is quite similar to that of Junin area, geological and geochemical survey could be efficient exploration methods.

REFERENCE

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Appendix 1 Mineral assemblages of the rocks under thin section

Ser. No.	Sample No.	Area	Geologic Units	Rock Name	Texture	Minerals: Phenocryst & main mineral							Groundmass							Acces.				Secondary minerals									
						Quartz	Plagioclase	K-feldspar	Biotite	Hornblende	Clinopyroxene	Opaque minerals	Quartz	Plagioclase	K-feldspar	Biotite	Hornblende	Glass	Opaque minerals	Apatite	Allanite	Sphene	Zircon	Quartz	Albite	K feldspar	Muscovite	Epidote	Chlorite	Calcite	Sericite	Limonite	Opaque minerals
1	A1003	Junin (Detail)	Qp	quartz porphyry	porphyritic	◯	◎		○	◯			◎	◯	●	○			○	●			●	○				○	◯		○		○
2	A1016		Gd	granodiorite	hypidiomorphic granular	◯	◎	◎	○	○		●								●		●	●						○		○		
3	C1002		Qp	quartz porphyry	porphyritic	◯	◎	●	○				◯	◯	○				●	●			●	○				○	○		○		●
4	C1011		Qp	altered quartz porphyry	porphyritic	◯																		◯		◯	●				◎		○
5	D1003		Qp	quartz porphyry	porphyritic	◯	◎		○				◯	◎		○												●	◯		○	●	●
6	E1013		Dp	diorite porphyry	porphyritic	○	◎		○	○			◎	◯	○									◎	◯	○		●	◯		○		●
7	C1022	Junin (Semidetail)	Gd	granodiorite	hypidiomorphic granular	◯	◎	◯	○	○		●								●		●	●						●		●		
8	C1027		Ap	andesite porphyry	porphyritic and intersertal		◯			○		●		◎			◯		●					●				●	◯	●			
9	D1015		Gd	granodiorite	hypidiomorphic granular	◎	◎	◯	○	○		○								●	●	●	●						●		●		
10	D1028		Gd	granodiorite	hypidiomorphic granular	◎	◎	◯	◯	○		●							●	●	●	●	●					●	○		●		○
11	E1026		Dp	diorite porphyry	porphyritic	◯	◯		○			●	◯	◎	○									◯		○		●	○		◯	●	●
12	E1027		Qp	quartz porphyry	porphyritic	◯	◯		○			●	◎	◯	○													●	○	○	◯		●
13	C1030	Cuellaje	Dp	diorite porphyry	porphyritic		◎			○			○	◎			○		○					●									●
14	C1033		Gd	granodiorite	hypidiomorphic granular	◎	◎	◯	○	○		●								●	●	●	●						●	○			
15	C1035		Qp	quartz porphyry	porphyritic	○			●				◎	◯		○			●														
16	D1046		Gd	granodiorite	hypidiomorphic granular	◎	◎	○	○	○		●								●	●	●	●						●		●		
17	D1057		Ap	andesite porphyry	porphyritic	●	○			◯				◎			◯		●					○				○	○	○			
18	F1008		Ap	quartz bearing andesite porphyry	porphyritic	○	◯		○	○			○	◯				◎						○					○	○			○
19	B1025	Pululahua	Hp	andesite	porphyritic and intersertal		◯			◯				◯				○	○														
20	C1046		lh	sandstone	clastic	◎	○																	◯				●	◎	◯			○
21	C1059		lh	andesite	porphyritic and intersertal		◎			○		●		◎				◎	●														
22	C1069		Gb	gabbro	granular		◎				◯	○																●	◯	○			
23	C1084		lh	silicifed rock (andesite ?)	porphyritic		◯			○														◎				●	○	◯	●		○
24	D1092		Hp	andesite	porphyrytic and hyalopilitic		○			◯		●		◯				◎	●	●													

◎ :abundant, ◯ :common, ○ :a little, ● :rare.

Ser. No.	Drill-hole No.	Depth (m)	Geologic Units	Rock Name	Texture	Minerals																						
						Phenocryst & main mineral							Ground-mass					Acces.				Secondary minerals						
						Quartz	Plagioclase	K-feldspar	Biotite	Hornblende	Clinopyroxene	Opaque minerals	Quartz	Plagioclase	K-feldspar	Biotite	Opaque minerals	Apatite	Allanite	Sphene	Zircon	Quartz	K-feldspar	Epidote	Chlorite	Calcite	Sericite	Opaque minerals
1	MJJ-1	115m	Gd	granodiorite	hypidiomorphic granular	◎	◎	◯	◯	○		●						●	●	●	●	◯		○	◯	○	○	○
2	MJJ-1	130m	Qp	quartz porphyry	porphyritic	◯	◎	●	○				◯	◎	○	○	●	●		●	●	◎	●		◯	◯	◯	●
3	MJJ-1	150m	Gd	granodiorite	hypidiomorphic granular	◎	◎	◯	◯	○		●	◯	◯	○		●	●	●	●	●	●		○	○	●	○	●

◎ :abundant, ◯ :common, ○ :a little, ● :rare.

Appendix 2 Mineral assemblages of the ores under polished section

Polished Section No.	Area	Occurrence	Chalcopyrite (cp)	Bornite (bn)	Chalcocite (cc)	Coyelite (cv)	Cuprite (Cup)	Malachite (Mal)	Nativecopper (Cu)	Molybdenite (mo)	Tetrahedrite (td)	Sphalerite (sp)	Galena (gn)	Pyrite (py)	Magnetit (Mt)	Goethite (Goe)	Hematite (Hm)	Ganguеminerals (G):Q:Quarzt	Remarks
A1001	Central zone of Junin area	bn-cc dissemination		●	●													◎	
A1008		bn-cc ore(from clayey vein?)	·	◎	○													●Q	minar occurrence of chalcopyrite in gualtz
A1012		bn-cc ore	·	◎	○	·												○Q	minor occurrence of chalcopyrite in bornite
C1001		cp veinlet and dissemination	○									·						◎	
C1007		py-Mt dissemination												·	·			◎	
C1008		cp veinlet and dissemination	○															◎	
C1010		bn-cc ore	·	◎	◎									·				○	Secondary enriched copper ore
C1015		mo-Q vein	·		·					○								◎Q	minor occurrence of chalcopynite in molybdenite
C1016		mo-Q vein	·		·	·				●								◎Q	
D1007		mo dissemination	·	·	·					○								◎Q	
E1002		Oxidized copper ore	·				◎	○	○									◎Q	Native copper in cuprite
D1019	Surrounding zone of Junina area	td-cp-py dissemination	●								●			○				◎Q	
D1022		cp-py dissemination	●											○				◎	
D1023		td-py dissemination	·								●			◎				○	
E1022		cp-py dissemination	●											○				◎Q	
E1025		cp-py dissemination	○											●				◎Q	
C1032	Cuellaje area	cp-mo ore	◎					●		●								○Q	
E1030		cp-Mt dissemination	●	·											●			◎Q	
E1031		Weathered cp ore	○		·	·										○		○Q	Goethite veinlets
F1010		bn-cp-Q veinlet	●	●	·	·		·								·		○Q	Partly weathered
F1011		mo-cp veinlet and dissemination	●		·	·				●								◎	
C1043	Pululahua area	cp-py-Q vein	●											○				○Q	
C1044		py-Q vein	·									·		○				◎Q	
C1045		sp-gn-cp-py ore	○									◎	○	●				○Q	
C1062		py-Q vein												○				◎Q	
E1037		sp-gn-cp ore	○									◎	○	●				○Q	
118.00m	MJJ-1	cp-cp veinlet mo-cp-py-Mt dissemination	●		·					·		·	·	○	·			◎	
130.80m		cp-cp veinlet cp-cp dissemination	○									·		○				◎	
132.40m		(cp)-(py) dissemination	·									·		·			·	◎	
139.70m		cp dissemination	●		·									·			·	◎	
147.40m		cp-(py) dissemination	●											·	·		·	◎	

◎>○>●>·

Appendix 3 Mineral assemblages of the rocks by X–ray diffraction analysis

Ser. No.	Sample No.	Rock Name	Mineral Names																					
			Montmorillonite	Ser./Mont. M.L.	Kaolinite	Halloysite	Chlorite	Sericite	Biotite	Quartz	Plagioclase	K-feldspar	Amphibole	Epidote	Tourmaline	Gibbsite	Goethite	Lepidocrocite	Pyrite	Hematite	Chalcopyrite	Bornite	Ten.-Tetra.	Molybdenite
1	RA1001	Granodiorite						〇		◎														
2	RA1003	Quartz porhyry					○	○		◎	◎													
3	RA1004	Granodiorite					○	◎		◎	〇													
4	RA1006	Granodiorite					○	◎		◎									○					
5	RA1007	Granodiorite						〇		◎									●					
6	RA1008	Quartz porhyry					○	○		◎	◎	○												
7	RA1009	Quartz porhyry						〇		◎							●							
8	RA1010	Quartz porhyry					○	○	●	◎	◎	○												
9	RA1011	Granodiorite					〇	○		◎		○							●					
10	RA1012	Granodiorite					〇	○	○	◎	●	○							●					
11	RA1013	Quartz porhyry					○	○		◎	◎	○												
12	RA1016	Granodiorite					○		〇	◎	◎	〇	〇											
13	RA1017	Granodiorite						〇		◎												○	○	
14	RA1019	Granodiorite					〇	○	○	◎	○	◎								●				
15	RA1021	Granodiorite					〇		○	◎	〇	〇												
16	RA1023	Granodiorite					○		○	◎	◎	◎	〇											
17	RA1028	Granodiorite					〇		○	◎	◎	〇	○											
18	RA1029	Granodiorite	○				●	○	●	◎	◎	◎												
19	RA1032	Quartz porhyry					●	○		◎	◎													
20	RA1034	Granodiorite					〇	●	●	◎	〇	◎							●					
21	RB1002	Granodiorite					○	○	〇	◎	〇	〇												
22	RB1003	Granodiorite					〇	〇		◎		○												
23	RB1004	Granodiorite						〇		◎							●							
24	RB1005	Granodiorite					〇		●	◎	◎	◎												
25	RB1007	Granodiorite						〇		◎														
26	RB1009	Granodiorite						〇		◎							●							
27	RB1012	Granodiorite					〇	●		◎	◎	○		○										
28	RB1014	Granodiorite					○	●		◎	◎	〇	○											
29	RB1016	Granodiorite					○		●	◎	◎	◎												
30	RB1020	Granodiorite					●		●	◎	◎	〇	○											
31	RB1024	Granodiorite					○			◎	◎	〇												
32	RB1028	Quartz porhyry					〇		○	◎	◎	〇	○											
33	RB1030	Quartz porhyry					○		○	◎	◎													
34	RB1031	Quartz porhyry					○		○	◎	◎	○												
35	RB1033	Granodiorite					○		●	◎	◎	○	〇											
36	RB1035	Granodiorite					○		●	◎	◎	◎				●								
37	RB1037	Granodiorite						〇		◎							○							
38	RB1039	Granodiorite		○			○		●	◎	◎	〇	○			〇								
39	RB1040	Granodiorite		○			○		●	◎	◎	◎	○			○								
40	RB1042	Granodiorite		●			○		●	◎	◎	〇	○											

◎ : abundant, 〇 : common, ○ : a little, ● : rare.

Ser. No.	Sample No.	Rock Name	Mineral Names																					
			Montmorillonite	Ser./Mont. M.L.	Kaolinite	Halloysite	Chlorite	Sericite	Biotite	Quartz	Plagioclase	K-feldspar	Amphibole	Epidote	Tourmaline	Gibbsite	Goethite	Lepidocrocite	Pyrite	Hematite	Chalcopyrite	Bornite	Ten.-Tetra.	Molybdenite
41	RB1043	Granodiorite		○			○		●	◎	〇	〇	○											
42	RB1046	Granodiorite					●	◎		◎		○				●								
43	RB1048	Granodiorite					○		●	◎	〇	◎	○			○								
44	RB1049	Granodiorite						〇		◎							●							
45	RB1050	Granodiorite						〇		◎							○	●						
46	RB1052	Granodiorite					○		●	◎	〇	◎				〇								
47	RB1056	Quartz porhyry				○		○		◎	●													
48	RB1060	Granodiorite					○		●	◎	◎	〇	●											
49	RC1001	Granodiorite						○	◎	◎	〇	◎												
50	RC1003	Granodiorite						〇		◎		〇												
51	RC1004	Granodiorite						◎		◎		○							○					
52	RC1005	Granodiorite					●	◎		◎	〇	〇									○			
53	RC1006	Quartz porhyry						〇		◎	◎	〇												
54	RC1007	Quartz porhyry					○	〇		◎	◎													
55	RC1008	Granodiorite						◎		◎														
56	RC1010	Granodiorite						◎	○	◎	○													
57	RC1011	Quartz porhyry						〇		◎		●												
58	RC1013	Granodiorite					○	◎	○	◎	○	○	○											
59	RC1017	Granodiorite						〇		◎														
60	RC1020	Granodiorite					〇		●	◎	〇	〇	○											
61	RC1023	Granodiorite						〇	〇	◎	〇	◎												
62	RC1024	Granodiorite						〇		◎	◎	〇												
63	RC1026	Granodiorite					○	〇	〇	◎	〇													
64	RC1027	Granodiorite					○	〇	〇	◎		〇							●					
65	RC1028	Granodiorite					○		○	◎	◎	〇												
66	RC1030	Granodiorite					〇	○	●	◎		〇					●	○						
67	RC1031	Quartz porhyry						〇		◎														
68	RC1032	Granodiorite					○		〇	◎	◎	〇	●											
69	RC1034	Granodiorite						◎	〇	◎														
70	RC1035	Granodiorite						〇		◎	◎													
71	RC1036	Granodiorite					○		〇	◎	◎	○												
72	RC1037	Granodiorite					●	〇		◎	◎	○												
73	RC1039	Granodiorite						〇		◎	〇													
74	RC1040	Granodiorite					〇	〇		◎														
75	RC1041	Quartz porhyry					●	〇		◎	◎	○							●					
76	RC1043	Granodiorite					〇		●	◎	◎	〇		○										
77	RC1044	Granodiorite					○	○		◎	◎	○												
78	RC1046	Granodiorite					○	○		◎	◎			●										
79	RC1048	Granodiorite					○	○		◎	◎													
80	RC1050	Granodiorite					●	○		◎	◎													

◎ : abundant, 〇 : common, ○ : a little, ● : rare.

Ser. No.	Sample No.	Rock Name	Mineral Names																					
			Montmorillonite	Ser./Mont. M.L.	Kaolinite	Halloysite	Chlorite	Sericite	Biotite	Quartz	Plagioclase	K-feldspar	Amphibole	Epidote	Tourmaline	Gibbsite	Goethite	Lepidocrocite	Pyrite	Hematite	Chalcopyrite	Bornite	Ten.-Tetra.	Molybdenite
81	RC1051	Granodiorite						◎		◎											〇			
82	RC1053	Granodiorite						〇		◎	○	○												
83	RC1055	Granodiorite						〇		◎	◎	○												
84	RC1057	Granodiorite					〇	○		◎	◎	〇		●										
85	RC1059	Granodiorite					○	●		◎		〇					●		●					
86	RC1061	Granodiorite					〇	○		◎	◎	〇												
87	RC1062	Granodiorite					○		〇	◎	◎	〇	○											
88	RC1064	Granodiorite					○	●	〇	◎	◎	〇	○											
89	RC1067	Granodiorite					○	〇		◎	○	○	●											
90	RC1070	Granodiorite					○	○	●	◎	◎	〇		○										
91	RC1072	Granodiorite					○	〇	○	◎	〇										○			
92	RC1074	Granodiorite			●			〇		◎		〇												
93	RC1077	Granodiorite	●		〇			●		◎		○								●				
94	RC1079	Granodiorite			〇		●	○		◎		〇												
95	RC1080	Granodiorite						〇		◎										●				
96	RD1002	Granodiorite						〇		◎		○												
97	RD1003	Granodiorite						◎		◎		○												
98	RD1009	Granodiorite						〇		◎		◎				●								
99	RD1011	Granodiorite						◎		◎		○												
100	RD1014	Quartz porhyry						〇		◎														
101	RD1017	Quartz porhyry						○		◎							●							
102	RD1018	Granodiorite					〇	●	●	◎	◎	◎	●	○										
103	RD1021	Granodiorite						〇		◎		〇												
104	RD1023	Granodiorite						〇		◎														
105	RD1027	Granodiorite						〇	●	◎														
106	RD1029	Granodiorite						〇		◎														
107	RD1033	Granodiorite					〇	●	●	◎	◎	◎												
108	RD1034	Granodiorite					○	〇		◎	◎													
109	RD1036	Granodiorite				●	○	○		◎	◎													
110	RD1038	Granodiorite				○	○	○		◎	〇													
111	RD1039	Granodiorite				○	○	○		◎	○					●								
112	RD1041	Granodiorite						〇		◎														
113	RD1043	Diorite porphyry				●		〇		◎														
114	RD1047	Granodiorite						〇		◎														
115	RD1051	Granodiorite						〇		◎														
116	RD1055	Granodiorite						〇		◎														
117	RD1058	Granodiorite					○	○		◎	◎	○		●										
118	RD1060	Granodiorite					○	●		◎	◎	〇		○										
119	RD1061	Granodiorite					○			◎	◎	〇		○	●									
120	RD1062	Granodiorite				○	○	○		◎	〇													

◎ : abundant, 〇 : common, ○ : a little, ● : rare.

Ser. No.	Sample No.	Rock Name	Mineral Names																					
			Montmorillonite	Ser./Mont. M.L.	Kaolinite	Halloysite	Chlorite	Sericite	Biotite	Quartz	Plagioclase	K-feldspar	Amphibole	Epidote	Tourmaline	Gibbsite	Goethite	Lepidocrocite	Pyrite	Hematite	Chalcopyrite	Bornite	Ten.-Tetra.	Molybdenite
121	RD1065	Granodiorite						◎		◎		●							●		◦			●
122	RD1067	Granodiorite					●	○		◎	◎													
123	RD1069	Granodiorite				◦		○		◎		○												
124	RD1071	Quartz porhyry						◎		◎														
125	RD1072	Diorite porphyry						◎		◎														
126	RE1002	Granodiorite						○		◎														
127	RE1004	Granodiorite						◎		◎														
128	RE1005	Quartz porhyry						○		◎	◎	◎												
129	RE1006	Quartz porhyry						○		◎		◎												
130	RE1007	Granodiorite						◎		◎														
131	RE1008	Granodiorite					●	○		◎		◎												
132	RE1009	Granodiorite				●		○		◎	◎	◎												
133	RE1010	Granodiorite						◎		◎		○												
134	RE1012	Granodiorite				●		○		◎		◎												
135	RE1014	Granodiorite				●		○		◎		◎												
136	RE1017	Granodiorite						◎		◎														
137	RE1019	Granodiorite						◎		◎														
138	RE1020	Granodiorite						◎		◎														
139	RE1022	Granodiorite						◎		◎														
140	RE1026	Granodiorite						◎		◎		○												
141	RE1027	Granodiorite				○		◎		◎														
142	RE1031	Quartz porhyry				○		◎																
143	RE1033	Quartz porhyry				◎		◎		●														
144	RE1036	Quart porphyry			◦	◦		◎	◎	◦		●												
145	RE1039	Diorite porphyry		●		◎		◎																
146	RE1042	Granodiorite				◎		◎																
147	RE1047	Diorite porphyry			●	○		◎	◎															
148	RE1048	Granodiorite			◦	●		◎	◎	○		●												
149	RE1050	Diorite porphyry			◦	◦		◎	◎	◦		●												
150	RE1051	Granodiorite				◎		◎																

◎ : abundant, ○ : common, ◦ : a little, ● : rare.

Ser. No.	Sample No.	Rock Name	Mineral Names											
			Chlorite	Sericite	Biotite	Quartz	Plagioclase	K-feldspar	Amphibole	Calcite	Goethite	Pyrite	Chalcopyrite	Ten.-Tetra.
1	C1023	str. sil. Gd.	●	○		◎	◎		●	○		●		
2	C1024	sil.-chl. Gd.	◯		○	◎	◎	○	○			●		
3	C1025	float of sil. Gd.	◯	◎		◎			●				○	
4	C1026	sil. Gd	○		○	◎	◎	○	●				●	
5	C1027	Dp	○		◯	◎	◎		○			●	●	
6	D1009	sil. Gd	○	○		◎	◎							
7	D1010	sil. Gd.	●	◯		◎	◎					○		
8	D1016	Gd.	○		◯	◎	◎	◯	◯		●			
9	D1024	Py-Cp-clay-vein in st. sil. Gd.		○								◎	◯	
10	D1025	Cp-Py qz vein in st. sil. Gd.		○		◎						○		○
11	D1026	Cp-Py qz vein in st. sil. Gd.		●		◎						◎	○	◯
12	D1027	Py qz vein in st. sil. Gd.		○		◎						○		●
13	D1040	sil.-arg. Gd.		◎		◎						●		
14	D1043	sil.-arg. Gd.		◯		◎								
15	E1020	Py rich vein		●		◎						◎		
16	E1021	Py st. diss. in st. sil Gd.		●		◎						◯		●
17	E1022	Py-Cp diss. and film in sil. Qp.		◎		◎						●	○	
18	E1023	Py rich vein in st. sil. Gd.				◎						◎	○	
19	E1024	Py-Cp diss. in qz vein.		○		◎						●	●	
20	E1025	Cp-Py diss. in qz vein.		●		◎						○	◎	

Ser. No.	Are	Sample No.	Rock Name	Montmorillonite	Ser./Mont. M.L.	Kaolinite	Pyrophyllite	Chlorite	Sericite	Biotite	Quartz	Plagioclase	K-feldspar	Amphibole	Laumontite	Calcite	Gypsum	Anhydrite	Geothite	Pyrite	Hematite	Chalcopyrite	Molybdenite
				Mineral Names																			
1	Cuellaje	C1028	chl. Gd.					○	○		◎	◎											
2	Cuellaje	C1033	sil. Gd.	●				o		o	◎	◎	o			o							
3	Cuellaje	C1034	Cp diss. in str. sil. Gd.					○	●	o	◎	◎	◎									o	
4	Cuellaje	C1037	lim.-clay vein in Gd.	o	o	○					◎	◎											
5	Cuellaje	C1038	sil. Gd.					○		○	◎	◎	o	●		o							
6	Cuellaje	C1039	sil. Gd.					o	○		◎	◎	◎	●									
7	Cuellaje	C1041	sil.-arg. chl. Gd.					○		○	◎	◎											
8	Cuellaje	D1050	Cp diss. in Gd.					o		○	◎	◎	○	○									
9	Cuellaje	D1054	Cp film in chl. Gd.	o				o		o	◎	◎	◎									o	●
10	Cuellaje	D1061	Py diss. in chl. sil. Gd.					○		◎	◎	◎	o	●									
11	Cuellaje	D1062	Py diss. in sil. gd			o			●		◎	◎	○										
12	Cuellaje	D1065	Py diss. in sil. chl. Gd					◎		o	◎	◎	o	o									
13	Cuellaje	E1030	Cp-Py-Chr diss. in chl. sil. Gd.					○		o	◎	◎	○	o								o	
14	Cuellaje	E1031	Lim.-Cp vein in Gd.					○	o	o	◎	◎	○	●					o				
15	Cuellaje	E1032	Lim-Cp-Hm vein in Gd.					o	o		◎	o	○								o	●	
16	Cuellaje	E1034	Chr film & diss. in chl. Gd.					○		o	◎	◎		○		o							
17	Cuellaje	E1035	Py-Cp film & diss. in sil. Gd.					●		o	◎	◎	○										
18	Cuellaje	F1009	Cp film & diss. in sil. arg. Gd.					○	◎		◎	o		●									
19	Cuellaje	F1010	Cp-Bo-Cv diss. in sil. Gd.					o	o				◎										
20	Cuellaje	F1011	Mo ntwk & Cp Bo diss. in sil. Gd.			○			○		◎		○									o	o
21	Cuellaje	F1012	Cp-Cv-Bo Cup diss in sil. chl. Gd.					○		◎	◎	◎	○										
22	Cuellaje	F1014	Py-Cp film & diss. in arg. Gd.					◎	◎		◎	◎	○										
23	Cuellaje	F1015	Cp-Py Chr vein & diss. in sil. chl. Gd.					○	o	o	◎	◎	○										
24	Cuellaje	F1016	Cp-Bo-Cv diss. & film sil. arg. Gd.			○		o	o	○	◎	◎	○							●		o	
25	Pululahua	C1047	white clay		○	o					◎									o			
26	Pululahua	C1048	white clay		o	○		●			◎									o		●	
27	Pululahua	C1054	Lim bleached zone					●			◎	o			○		o						
28	Pululahua	C1060	Gyp			◎	○				◎						◎						
29	Pululahua	C1061	Gyp-Py	●							○						◎	o					
30	Pululahua	C1073	yellowish white clay		o	○					◎	○		o									
31	Pululahua	E1041	andesitic tuff with Py diss.					○	o		◎						◎			○			
32	Pululahua	E1046	white arg. &sil. rock			○					◎								○		o		

・M.L. : Mixed Layer

Ser. No.	Hole No.	Depth (m)	Rock Name	Montmorillonite	Ser./Mont. M.L.	Kaolinite	Halloysite	Chlorite	Sericite	Biotite	Quartz	Plagioclase	K-feldspar	Amphibole	Epidote	Calcite	Gibbsite	Pyrite	Chalcopyrite
1	MJJ-1	3.0	Granodiorite			○	●				◎		●				○		
2		6.0	Granodiorite			○	●	●			◎		●				o		
3		9.0	Quartz porhyry			o	●	o			◎	◎	o				●		
4		12.0	Quartz porhyry			●	●	o			◎	◎	o		●				
5		15.0	Granodiorite					○	●		◎	◎	o		●				
6		18.0	Granodiorite					○			◎	◎	o	○	●				
7		21.0	Granodiorite					○			◎	◎	o	○					
8		24.0	Granodiorite					○			◎	◎	o	o	●			o	
9		27.0	Granodiorite					○			◎	◎	o	○	●				
10		30.0	Granodiorite					◎		o	◎	◎	o	◎					
11		33.0	Granodiorite					○		●	◎	◎	o	○					
12		36.0	Granodiorite					○		o	◎	◎	o	◎					
13		37.3	Granodiorite					○		o	◎	◎	o	○					
14		39.0	Granodiorite					○		●	◎	◎	o	o					
15		42.0	Granodiorite					○			◎	◎	o		●				
16		45.0	Granodiorite	○		o			o		○	◎	o	●	●				
17		47.6	Granodiorite	o				◎	●		◎	◎	o	●					
18		48.0	Granodiorite	◎		o			●		◎	◎	o					●	
19		51.0	Granodiorite					○	o		◎	◎	○						
20		54.0	Granodiorite					○		○	◎	◎	o	◎					
21		57.0	Granodiorite					◎			◎	◎	o	●	o				
22		58.4	Granodiorite					o	●		◎	◎	o	o	●				
23		60.0	Granodiorite					○		○	◎	◎	o	o	●				
24		63.0	Granodiorite					○		o	◎	◎	o	○					
25		64.2	Granodiorite					○		o	◎	◎	o	○					
26		66.0	Granodiorite					○		o	◎	◎	o	○					
27		69.0	Granodiorite					○		o	◎	◎	o	o					
28		72.0	Granodiorite					◎		o	◎	◎	o	o	●				
29		75.0	Granodiorite					◎			◎	◎	o			o		●	
30		78.0	Granodiorite					○			◎	◎			○	○		●	
31		81.0	Granodiorite					○		○	◎	◎	o	○					
32		84.0	Granodiorite					○		o	◎	◎	o	○					
33		85.6	Granodiorite					○		○	◎	◎	o	◎					
34		87.0	Granodiorite						○		◎							o	○
35		90.0	Granodiorite					◎				○	◎		o			o	
36		93.0	Granodiorite					○		●	◎	◎	o	o					
37		96.0	Granodiorite					◎			◎	◎	o		●	o		●	
38		99.0	Granodiorite					○		o	◎	◎	o	○					
39		102.0	Granodiorite					○		○	◎	◎	o	◎					
40		105.0	Granodiorite					○		●	◎	◎	o	o	o	o			

Ser. No.	Hole No.	Depth (m)	Rock Name	Mineral Names															
				Montmorillonite	Ser./Mont. M.L.	Kaolinite	Halloysite	Chlorite	Sericite	Biotite	Quartz	Plagioclase	K-feldspar	Amphibole	Epidote	Calcite	Gibbsite	Pyrite	Chalcopyrite
41	MJJ-1	108.0	Granodiorite					◯			◎	◎	○	○		○			
42		111.0	Granodiorite					◎		○	◎	◎	○	◯					
43		112.0	Granodiorite					◯			◎	◎	○	◯					
44		114.0	Granodiorite					◯		○	◎	◎	○	◯					
45		117.0	Granodiorite					◯		○	◎	◎	○	◯	●				
46		119.5	Granodiorite					◯		○	◎	◎	○	◯	●				
47		120.0	Granodiorite					◯		●	◎	◎	◯	●	●	◎			
48		123.0	Granodiorite					◯		○	◎	◎	○	◯					
49		126.0	Granodiorite					◯		●	◎	◎	○	○		●*			
50		127.1	Granodiorite					◯	●		◎	◎	◯			○*		●	
51		129.0	Quartz porhyry					○	●		◎	◎	○			●*		●	
52		130.8	Quartz porhyry					○	●		◎	◎	○					●	
53		132.0	Quartz porhyry					○	●		◎	◎	○			○*			
54		135.0	Quartz porhyry					○	●		◎	◎	○			○*		●	
55		138.0	Granodiorite					◯	●		◎	◎	○		○	○*			
56		141.0	Granodiorite					◎	●		◎		◯			○*		●	
57		144.0	Granodiorite					◯	●		◎	◎	○		●	○*			
58		147.0	Granodiorite					◯		●	◎	◎	○	○		●*			
59		148.0	Granodiorite		○			◎		○	◎	◎	○						
60		150.0	Granodiorite					◯		◯	◎	◎	○	◯					

◎ : abundant, ◯ : common, ○ : a little, ● : rare.
* : There is possibility that the mineral is chalcopyrite.

Appendix 4 Assay data of ore samples

Ser. No.	Sample No.	Are	Description	Assay Results					
				Cu (%)	Pb (%)	Zn (%)	Au (g/t)	Ag (g/t)	Mo (%)
1	A1001	Junin (Detail)	Bo-Cc films along the crucks in qz. por..	1.35	<0.01	<0.01	<0.1	3.4	<0.01
2	A1004		Cp-Cc-Bo in qz. vein.	3.68	0.01	0.18	0.1	10.6	0.13
3	A1006		Cp diss. in qz. vein.	0.08	<0.01	<0.01	<0.1	0.2	0.07
4	A1008		Cp-Py clay vein.	32.02	<0.01	0.01	1.7	97.0	0.01
5	A1011		Secondary minerals in clay vein.	18.07	<0.01	<0.01	0.2	81.8	<0.01
6	A1012		Bo-Cp and secondary minerals.	42.42	<0.01	0.01	0.3	137.2	<0.01
7	A1013		Bo-Cp and secondary minerals.	4.80	<0.01	<0.01	<0.1	12.5	<0.01
8	A1014		Py-Cp(?)-Bo-Mo(?)	20.65	<0.01	0.01	0.2	74.8	<0.01
9	A1015		Secondary minerals enrichments.	0.07	<0.01	0.01	<0.1	0.4	<0.01
10	A1018		Py-Cp diss. in gd..	0.24	0.01	2.23	<0.1	23.4	<0.01
11	B1001		Mo qz. vein (W:3cm).	0.01	0.01	<0.01	<0.1	<0.1	<0.01
12	B1002		Lim-Py qz. vein (W:65cm).	0.17	<0.01	<0.01	0.1	1.7	<0.01
13	B1003		Lim qz. vein (W:5-7cm).	0.10	<0.01	<0.01	<0.1	0.4	<0.01
14	B1004		Lim qz. vein (W:5cm).	0.10	<0.01	<0.01	0.1	0.6	0.01
15	B1005		Lim in cruck (W:10cm).	0.46	<0.01	<0.01	0.1	9.3	<0.01
16	B1006		Lim qz. vein.	0.03	<0.01	<0.01	<0.1	19.4	<0.01
17	B1007		Lim vein.	4.32	<0.01	<0.01	<0.1	14.5	0.08
18	B1008		Cp-Mo-Py clay vein.	1.45	<0.01	<0.01	0.1	25.2	0.09
19	B1009		Cp-Py-Mo qz. vein.	1.33	<0.01	0.02	<0.1	9.9	<0.01
20	B1010		Cp-Py-Mo qz. vein.	1.28	<0.01	0.02	<0.1	3.5	0.74
21	B1011		Cp-Py diss..	0.67	<0.01	<0.01	<0.1	1.4	<0.01
22	C1001		Cp-Bo-Cc-Cup diss./ntwk.. in str. sil. gd..	1.44	<0.01	<0.01	<0.1	<0.1	<0.01
23	C1003		Cup-Cc diss./chry films.	0.07	<0.01	<0.01	<0.1	0.3	<0.01
24	C1005		Float of Bo-Chry diss in gd..	0.70	<0.01	<0.01	<0.1	0.5	<0.01
25	C1006		Float of Cc-Cv qz. banded vein.	0.01	<0.01	<0.01	<0.1	<0.1	<0.01
26	C1007		Cp-Py-Bo diss/films in qz. por. and gd..	0.37	<0.01	<0.01	<0.1	0.9	0.01
27	C1008		Bo-Cp-Mo-Cc diss./films in str. sil. gd..	1.09	<0.01	0.01	<0.1	2.0	0.01
28	C1009		Py-Cp netwk. vlet..	0.09	<0.01	<0.01	<0.1	7.9	<0.01
29	C1010		Bo-Cc-Chry ore.	15.51	<0.01	<0.01	0.1	43.8	<0.01
30	C1011		Cp-Py-Cc-Chry diss in str. sil gd..	0.14	<0.01	<0.01	<0.1	0.5	0.01

Ser. No.	Sample No.	Are	Description	Assay Results Cu (%)	Pb (%)	Zn (%)	Au (g/t)	Ag (g/t)	Mo (%)
31	C1012	Junin (Detail)	Cc-Lim-Mo qz. vein (2.7m).	0.16	<0.01	<0.01	<0.1	2.4	0.02
32	C1013		Cup-Chry-Mo-clay qz. vein.	0.26	<0.01	<0.01	<0.1	6.4	0.01
33	C1014		Bo-Cp-Cc-Chry qz. vein (1.5m).	1.63	<0.01	<0.01	<0.1	2.7	<0.01
34	C1015		Cp-Mo qz. vein (1m).	2.17	<0.01	<0.01	0.1	4.6	0.97
35	C1016		Bo-Cc-Cp-Mo qz. vein.	0.28	<0.01	<0.01	<0.1	4.4	0.14
36	C1017		Cp diss in str. sil. gd..	0.25	<0.01	<0.01	<0.1	1.3	<0.01
37	C1018		Py-Cp-Cc-Bo-Chry diss/films in str. sil. gd..	0.37	<0.01	<0.01	<0.1	3.5	<0.01
38	C1019		Bo-Cc-Cp diss/film in arg.>sil. gd..	0.10	<0.01	<0.01	<0.1	0.8	<0.01
39	C1020		Sil-arg-Cc-Cp-Py zone (50m).	1.22	<0.01	<0.01	<0.1	1.3	0.01
40	C1021		Str. sil-sulf zone (2m), ntwk films>diss.	0.72	<0.01	<0.01	<0.1	1.7	<0.01
41	D1001		Lim veins in gd..	0.06	<0.01	<0.01	<0.1	23.0	<0.01
42	D1002		Lim-Py veins in gd..	0.19	<0.01	<0.01	<0.1	3.8	0.01
43	D1004		Py-Cp-Bo-Chry sulfide rich vein.	26.32	<0.01	0.01	0.1	77.1	<0.01
44	D1006		Cp-Py-Mo diss. in gd..	0.97	<0.01	<0.01	<0.1	1.0	<0.01
45	D1007		Cp-Py-Mo diss in qz. vein.	0.13	<0.01	<0.01	<0.1	0.4	0.51
46	E1002		Cup-Cc-Chry rich vein. (W:50cm)	41.62	0.03	0.07	<0.1	<0.1	0.39
47	E1003		Cc-Chry rich qz. vein. (W:1m)	42.28	<0.01	0.01	0.1	8.1	0.02
48	E1007		Qz. vein.	0.06	<0.01	<0.01	<0.1	<0.1	0.01
49	E1011		Py-Cc diss. in str. sil. rock.	0.66	<0.01	<0.01	<0.1	0.5	<0.01
50	E1012		Cc-Lim-Bo rich vlet. (5cm)	6.23	<0.01	<0.01	0.2	32.0	1.14
51	E1014		Cc-Bo-Cp-Py-Mo str. diss.. in qz. vein. (W:40cm)	2.48	<0.01	0.01	0.1	14.2	0.01
52	E1015		Cc-Bo-Py str. diss. in qz vein. (40cm)	3.76	<0.01	0.03	0.1	23.6	0.06
53	C1023	Junin (Semidetail)	Light grey str. sil. gd..	0.02	<0.01	<0.01	<0.1	<0.1	<0.01
54	C1024		Sil.-chl. gd with Py film.	0.01	<0.01	0.01	<0.1	<0.1	<0.01
55	C1025		Float of sil. gd with Bo-Cc qz. vlet.	0.24	<0.01	0.01	0.3	1.7	<0.01
56	C1026		Sil gd with Py-(Cp) Film.	0.01	<0.01	0.01	<0.1	<0.1	<0.01
57	C1027		Dio por. with Py-Cp diss..	0.01	<0.01	0.01	<0.1	<0.1	<0.01
58	D1019		Float of Cp-Py-Bo-Mo-Chry vein.	3.68	<0.01	0.24	0.1	13.0	0.06
59	D1021		Cp-Py-Bo-Mo sulfide rich vein. (N70W85S. 0.6mx3m)	20.97	0.01	0.28	0.6	748.0	<0.01
60	D1022		Py-Cp-Mo qz vein. (N70E80N. 0.6mx4mx2m)	2.38	<0.01	0.02	<0.1	156.7	<0.01

Ser. No.	Sample No.	Are	Description	Assay Results Cu (%)	Pb (%)	Zn (%)	Au (g/t)	Ag (g/t)	Mo (%)
61	D1023	Junin (Semidetail)	Py-Cp-clay sulfide rich vein. (N70E90, W:10cm)	10.47	<0.01	0.02	<0.1	13.9	<0.01
62	D1024		Py-Cp-Bo-Mo-Chry Clay vein. (N50E80S, 1mx8mx4m)	11.07	0.01	<0.01	0.1	27.3	<0.01
63	D1025		Cp-Py-Mo qz. vein. (N60E80S, 1.6mx10m)	5.77	<0.01	<0.01	<0.1	31.0	<0.01
64	D1026		Py-Cp-Mo clay qz vein. (60E80S, 1.6mx5mx3m)	0.66	0.03	0.07	<0.1	27.9	0.01
65	D1027		Py-Mo qz vein. (N40E90, 1mx6mx3m)	0.34	<0.01	0.01	<0.1	12.1	<0.01
66	D1044		Float of Cp-Py-Mo vein.	0.22	0.02	0.02	0.7	11.7	0.01
67	E1020		Py rich vein. (W:10cm)	0.37	<0.01	<0.01	0.2	3.5	<0.01
68	E1021		Py str. diss. in str. sil. gd..	0.25	<0.01	<0.01	0.1	1.1	0.01
69	E1022		Tet-Py-Cp md. diss. and film in sil. po..	0.63	<0.01	<0.01	<0.1	1.4	<0.01
70	E1023		Py rich vein in str. sil. gd.. (W:10cm)	1.26	<0.01	<0.01	<0.1	1.8	<0.01
71	E1024		Py-Cup-Cc wk. diss in qz. vein. (W:40cm)	0.33	<0.01	<0.01	<0.1	8.3	0.09
72	E1025		Tet-Py-Cp diss and film in qz. vein. (W:50cm)	2.68	<0.01	<0.01	<0.1	4.5	0.03
73	G1001		Py-Cp diss. in sil. gd..	1.10	<0.01	<0.01	<0.1	24.8	<0.01
74	B1024	Cuellaje	qz. vein.	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01
75	C1028		Chry-Spec clay vlet. in chl. gd.. (5-30cm)	6.94	<0.01	0.02	<0.1	<0.1	<0.01
76	C1029		Chry-Spec clay vlet. in weathered gd..	1.43	<0.01	0.02	0.1	45.6	<0.01
77	C1031		Chry-Lim-qz. vein zone. (30cm)	5.18	<0.01	0.02	<0.1	<0.1	<0.01
78	C1032		Py-Cp-Cc-Bo-Chry-Lim qz. vein. (15cmx6m)	6.97	<0.01	<0.01	<0.1	6.3	0.13
79	C1034		Cv-Cp-Chry-Py in joint of str. sil. gd./diss..	0.66	<0.01	<0.01	<0.1	0.2	<0.01
80	C1037		Lim clay vein in gd.. (W:5-15cm)	0.07	<0.01	<0.01	<0.1	<0.1	<0.01
81	C1038		Wk. sil. gd. with Cp-Py diss..	0.06	<0.01	<0.01	<0.1	<0.1	<0.01
82	C1039		Arg.<sil. zone with clay in wk. sil. gd., qz. ntwk vlet..	0.15	<0.01	<0.01	<0.1	<0.1	<0.01
83	C1041		Sil.-arg.-chl. gd with Chry qz ntwk vlet/Cp-Py diss.	0.36	<0.01	<0.01	0.1	5.5	<0.01
84	C1042		Fresh gd., Cp-Py diss/film.	0.11	<0.01	<0.01	<0.1	<0.1	<0.01
85	D1050		Cp films/diss. in gd..	0.11	<0.01	<0.01	<0.1	<0.1	<0.01
86	D1054		Cp films/veins in chl. gd..	0.42	<0.01	<0.01	<0.1	0.9	<0.01
87	D1061		Py-Cp diss./films in chl. and sil. gd..	0.01	<0.01	<0.01	<0.1	<0.1	<0.01
88	D1062		Py-Cp diss. in sil. gd..	0.04	<0.01	<0.01	<0.1	<0.1	<0.01
89	D1065		Cp-Py diss. in sil. and chl. gd..	0.08	<0.01	<0.01	<0.1	<0.1	<0.01
90	E1030		Cp-Py-Chry diss. and film in wk. chl. and sil gd..	0.53	<0.01	<0.01	<0.1	<0.1	<0.01

Ser. No.	Sample No.	Are	Description	Assay Results					
				Cu (%)	Pb (%)	Zn (%)	Au (g/t)	Ag (g/t)	Mo (%)
91	E1031	Cuellaje	Lim-Cp vlet in gd.. (W:3cm)	7.98	<0.01	0.01	0.4	36.5	0.03
92	E1032		Lim-Cp-Ht vlet. in gd.. (W:4cm)	7.31	<0.01	0.01	0.1	30.7	<0.01
93	E1034		Chry film and wk. diss., rare Bo. in wk. chl. gd..	0.46	<0.01	<0.01	<0.1	1.6	<0.01
94	E1035		Py-Cp film and wk sil. gd..	0.07	<0.01	<0.01	<0.1	<0.1	<0.01
95	E1036		Py-Cp film in wk. sil. and ckl. gd..	0.07	<0.01	<0.01	<0.1	<0.1	<0.01
96	F1006		Lim-qz vein in fault zone. (W:30cm)	0.05	<0.01	<0.01	<0.1	<0.1	<0.01
97	F1007		Cp-Lim qz vein. (W:3cm)	0.05	<0.01	<0.01	0.3	6.1	0.05
98	F1009		Cp-Cc-Chry film/Cp diss in mod. sil.-wk. arg. gd.. (15m)	0.13	<0.01	<0.01	<0.1	<0.1	<0.01
99	F1010		Cp-Bo-Cc-Cv diss./film/ qz. vein in str. sil. gd.(30m)	0.74	<0.01	<0.01	<0.1	4.8	0.01
100	F1011		Cp-Cc-Bo-Chry diss./Mo ntwk. in mod. sil.-mod.arg. gd..	1.66	<0.01	<0.01	<0.1	5.2	0.11
101	F1012		Cp-Cc-Cv-Bo-Cup. diss in str. sil.-wk. chl. dio. por.. (30m)	0.28	<0.01	<0.01	<0.1	<0.1	<0.01
102	F1013		Float of Py-Cp-Cc-Bo-Cv diss. in mod. sil. gd por..	0.12	<0.01	<0.01	<0.1	1.6	<0.01
103	F1014		Py-Cp-Cc film/vlets/diss. in wk arg. gd..(10m)	0.13	<0.01	<0.01	<0.1	<0.1	<0.01
104	F1015		Cp-Py-Cc-Chry vlet/films/diss in sil.-arg.-chl. gd/dio por.	0.14	<0.01	<0.01	<0.1	1.3	<0.01
105	F1016		Cp-Bo-Cc-Cv diss/film in mod. sil.-wk. arg. gd..(15m)	0.53	<0.01	<0.01	<0.1	1.9	<0.01
106	G1004		Py diss. in mylo./dio..	0.02	<0.01	0.01	<0.1	<0.1	<0.01
107	G1007		Chry film/Cp-Py diss and film. in chl. gd..	0.17	<0.01	0.01	<0.1	<0.1	<0.01
108	C1043	Pululahua	Float of Py-Cp milky qz ore.	3.99	0.06	0.05	1.7	182.5	<0.01
109	C1044		Float of Py>Cp semi-trans. qz. ore.	1.52	0.08	0.62	1.3	93.5	<0.01
110	C1045		Float of Gn>Cp milky qz. ore.	0.57	11.91	24.80	1.1	52.3	<0.01
111	C1054		Lim bleached zone.	<0.01	0.02	0.04	<0.1	<0.1	<0.01
112	C1055		Py sil. andesitic coarse tf..	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01
113	C1060		Gyp-Gr min. vein.	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01
114	C1061		Gyp-Py.	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01
115	C1063		bre. str. sil. rock, Py diss.. (hydrothermal breccia)	0.01	<0.01	0.01	<0.1	<0.1	<0.01
116	E1037		Ga-Sph-Cp ore.	1.10	9.34	22.31	0.3	58.3	<0.01

Ore analysis of MJJ-1 drilling hole.

Ser. No.	Hole No.	Depth (m)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Au (g/t)	Ag (g/t)	Mo (ppm)
1	MJJ-1	72.8 - 73.8	27	152	200	Tr	Tr	<1
2		73.8 - 74.8	24	89	137	Tr	Tr	<1
3		74.8 - 75.8	28	45	189	Tr	Tr	<1
4		76.2 - 76.3	11	40	77	Tr	Tr	<1
5		76.6 - 76.7	14	31	81	Tr	Tr	<1
6		77.0 - 77.5	181	34	91	Tr	Tr	20
7		77.7 - 77.8	13	36	214	Tr	Tr	<1
8		78.0 - 78.2	12	27	99	Tr	Tr	<1
9		79.5 - 79.8	63	30	124	Tr	Tr	<1
10		90.8 - 90.9	9	36	99	Tr	Tr	1
11		91.8 - 91.9	340	27	90	Tr	Tr	7
12		92.7 - 92.8	28	29	74	Tr	Tr	<1
13		93.2 - 94.6	531	25	92	Tr	Tr	4
14		95.3 - 95.5	11	18	75	Tr	Tr	<1
15		95.8 - 96.0	10	16	74	Tr	Tr	<1
16		97.7 - 97.8	26	22	76	Tr	Tr	<1
17		97.9 - 98.3	906	16	87	Tr	2.5	18
18		100.1 - 100.2	40	17	59	Tr	Tr	<1
19		100.3 - 100.8	384	21	81	Tr	Tr	22
20		102.5 - 102.8	62	21	70	Tr	Tr	<1
21		104.5 - 104.7	77	18	89	Tr	Tr	<1
22		104.9 - 105.9	70	23	66	Tr	Tr	<1
23		106.6 - 106.7	48	17	85	Tr	Tr	<1
24		107.5 - 107.6	14	16	92	Tr	Tr	<1
25		108.0 - 108.6	45	23	95	Tr	Tr	<1
26		108.9 - 109.0	72	16	116	Tr	Tr	<1
27		110.7 - 110.8	59	21	80	Tr	Tr	<1
28		111.8 - 112.0	118	19	105	Tr	Tr	3
29		112.7 - 112.8	71	30	95	Tr	Tr	<1
30		113.8 - 114.3	65	18	82	Tr	Tr	2
31		114.3 - 115.0	49	20	90	Tr	Tr	<1
32		116.4 - 116.7	42	21	127	Tr	Tr	<1
33		117.9 - 118.0	764	22	132	Tr	Tr	35
34		120.3 - 120.6	206	28	158	Tr	Tr	1
35		121.2 - 121.3	15	18	130	Tr	Tr	<1

Ore analysis of MJJ-1 drilling hole.

Ser. No.	Hole No.	Depth (m)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Au (g/t)	Ag (g/t)	Mo (ppm)
36	MJJ-1	122.4 - 122.5	18	17	111	Tr	Tr	<1
37		124.0 - 124.4	85	18	95	Tr	Tr	<1
38		125.2 - 125.5	16	20	148	Tr	Tr	<1
39		126.1 - 127.1	162	23	87	Tr	Tr	3
40		127.1 - 128.1	26	17	203	Tr	Tr	<1
41		128.1 - 129.1	185	17	85	Tr	Tr	<1
42		129.1 - 130.1	507	13	81	Tr	Tr	<1
43		130.1 - 131.1	74	21	50	Tr	Tr	<1
44		131.1 - 132.1	89	13	57	Tr	Tr	<1
45		132.1 - 133.1	23	10	60	Tr	Tr	<1
46		133.1 - 134.1	196	12	86	Tr	Tr	<1
47		134.1 - 135.1	18	15	47	Tr	Tr	<1
48		135.1 - 136.1	14	16	70	Tr	Tr	<1
49		136.1 - 137.1	13	11	36	Tr	Tr	<1
50		137.1 - 138.1	29	44	75	Tr	Tr	<1
51		138.1 - 139.1	94	17	81	Tr	Tr	5
52		139.9 - 140.0	12	18	81	Tr	Tr	<1
53		140.3 - 140.4	18	15	156	Tr	Tr	<1
54		141.6 - 142.1	133	21	161	Tr	Tr	<1
55		142.5 - 142.9	173	14	94	Tr	Tr	<1
56		143.0 - 143.1	62	26	234	Tr	Tr	<1
57		144.0 - 145.2	128	18	146	Tr	Tr	<1
58		146.5 - 146.6	44	16	119	Tr	Tr	<1
59		148.0 - 148.1	123	13	125	Tr	Tr	<1
60		148.4 - 148.5	104	16	69	Tr	Tr	<1
61		148.9 - 149.0	54	15	126	Tr	Tr	<1
62		149.6 - 149.7	141	14	65	Tr	Tr	<1

Appendix 5 Analytical data of geochemical rock samples

List of Geochemical Analysis(1)

Ser. No.	Sample No.	Geol Unit	Location (km) X-coord	Y-coord	Cu ppm	Pb ppm	Zn ppm	Au ppb	Ag ppm	Mo ppm
1	RA1007	Gd	760.353	35.961	514	2.0	24	1.0>	.30	1.0
2	RA1008	Qp	760.292	35.947	66	4.0	56	1.0>	.10>	1.0>
3	RA1009	Qp	760.212	35.951	46	8.0	3	2.0	.10>	1.0>
4	RA1010	Qp	760.147	36.023	218	14.0	32	1.0>	.10>	1.0>
5	RA1015	Gd	760.284	36.406	90	2.0	24	1.0>	.10>	1.0>
6	RA1016	Gd	760.267	36.479	106	2.0	44	1.0>	.10>	1.0>
7	RA1019	Gd	760.473	36.570	205	2.0	58	18.0	.10>	1.0>
8	RA1020	Gd	760.486	36.606	351	2.0	58	1.0>	.10>	1.0>
9	RA1022	Gd	760.590	36.747	188	3.0	92	1.0>	.10>	1.0>
10	RA1023	Gd	760.641	36.803	540	3.0	51	1.0>	.10>	1.0>
11	RA1024	Gd	760.695	36.853	229	3.0	45	1.0>	.10>	1.0>
12	RA1025	Gd	760.745	34.845	215	3.0	81	1.0>	.10>	1.0>
13	RA1026	Gd	760.688	34.918	17	3.0	72	1.0>	.10>	1.0>
14	RA1027	Gd	760.642	34.939	19	2.0	452	1.0>	.10>	1.0>
15	RA1028	Gd	760.549	35.055	80	3.0	108	1.0>	.10>	1.0>
16	RA1029	Gd	760.513	35.073	30	3.0	156	1.0>	.10>	1.0>
17	RA1030	Gd	760.447	35.107	11	2.0	50	1.0>	.10>	1.0>
18	RA1031	Qp	760.413	35.138	5	6.0	81	1.0>	.10>	1.0>
19	RA1032	Qp	760.355	35.192	21	5.0	31	1.0>	.10>	1.0>
20	RA1033	Gd	760.524	35.021	34	2.0	68	1.0>	.10>	1.0>
21	RA1034	Gd	760.441	34.992	300	88.0	112	1.0>	1.60	1.0>
22	RA1035	Gd	760.378	35.001	23	25.0	42	1.0>	.10>	1.0>
23	RA1036	Qp	760.334	35.035	19	6.0	38	1.0>	.10>	1.0>
24	RA1037	Qp	760.280	35.072	28	5.0	44	1.0>	.10>	1.0>
25	RA1038	Gd	760.276	35.116	155	2.0	30	1.0>	.10>	1.0>
26	RA1039	Gd	760.246	35.158	12	3.0	36	1.0>	.10>	1.0>
27	RB1001	Gd	760.808	35.838	527	4.0	33	1.0>	.10>	2.0
28	RB1002	Gd	760.782	35.901	621	5.0	27	1.0>	.10>	1.0>
29	RB1003	Gd	760.726	36.019	142	2.0	43	1.0>	.10>	1.0>
30	RB1004	Gd	760.644	36.098	21	1.0	4	9.0	1.50	1.0>
31	RB1005	Gd	760.588	36.167	115	3.0	66	1.0>	.10>	1.0>
32	RB1006	Gd	760.528	36.217	73	4.0	59	1.0>	.10>	1.0>
33	RB1007	Gd	760.482	36.270	96	2.0	7	1.0>	.10>	1.0>
34	RB1008	Gd	760.550	36.472	96	5.0	12	1.0>	.10>	1.0>
35	RB1009	Gd	760.655	36.587	86	2.0	4	3.0	.10>	1.0>
36	RB1010	Gd	760.709	36.712	277	5.0	92	1.0>	.10>	1.0>
37	RB1011	Gd	760.760	36.795	183	5.0	67	1.0>	.10>	1.0>
38	RB1012	Gd	760.755	34.938	60	8.0	275	1.0>	.10>	1.0>
39	RB1013	Gd	760.709	34.992	26	6.0	245	2.0	.10>	1.0>
40	RB1014	Gd	760.646	35.073	119	4.0	167	1.0>	.10>	1.0>
41	RB1015	Qp	760.597	35.175	27	2.0	57	1.0>	.10>	1.0>
42	RB1016	Gd	760.537	35.242	72	3.0	27	1.0>	.10>	1.0>
43	RB1017	Gd	760.438	35.261	27	6.0	78	1.0>	.10>	1.0>
44	RB1018	Gd	760.346	35.321	11	3.0	67	1.0>	.10>	1.0>
45	RB1019	Gd	760.216	35.387	7	3.0	42	1.0>	.10>	1.0>
46	RB1020	Gd	760.091	35.413	17	2.0	30	1.0>	.10>	1.0>
47	RB1021	Gd	759.975	35.508	11	4.0	31	1.0>	.10>	1.0>
48	RB1022	Gd	760.024	35.623	13	5.0	70	1.0>	.10>	1.0>
49	RB1023	Gd	760.045	35.734	10	4.0	81	3.0	.10>	1.0>
50	RB1024	Gd	759.982	35.847	18	3.0	55	1.0>	.10>	1.0>

List of Geochemical Analysis(2)

Ser. No.	Sample No.	Geol Unit	Location (km) X-coord	Y-coord	Cu ppm	Pb ppm	Zn ppm	Au ppb	Ag ppm	Mo ppm
51	RB1025	Gd	760.664	35.490	2585	2.0	43	1.0>	.40	1.0>
52	RB1026	Gd	760.630	35.535	1973	5.0	31	1.0>	1.20	1.0>
53	RB1027	Gd	760.630	35.615	2511	5.0	61	1.0>	.10>	1.0>
54	RB1028	Qp	760.628	35.659	340	3.0	30	1.0>	1.00	1.0>
55	RB1029	Gd	760.616	35.708	1759	3.0	22	1.0>	.10>	1.0>
56	RB1030	Qp	760.583	35.768	130	2.0	11	1.0>	.10>	1.0
57	RB1031	Qp	760.526	35.793	41	3.0	31	1.0>	.10>	1.0>
58	RB1032	Qp	760.441	35.850	78	2.0	63	5.0	.10>	1.0>
59	RB1033	Gd	760.382	35.872	19	3.0	43	1.0>	.10>	1.0>
60	RB1034	Qp	760.323	35.870	49	3.0	36	39.0	.10>	1.0>
61	RB1035	Gd	760.249	35.874	34	3.0	81	1.0>	.10>	1.0>
62	RB1036	Gd	760.098	35.893	23	3.0	37	1.0	1.20	1.0>
63	RB1037	Gd	759.919	36.156	95	7.0	10	3.0	.10>	1.0>
64	RB1038	Gd	759.942	36.231	138	8.0	3	1.0>	.10>	1.0>
65	RB1039	Gd	760.252	36.190	57	31.0	71	1.0>	.10>	1.0>
66	RB1040	Gd	760.209	36.211	173	5.0	43	1.0>	.10>	1.0>
67	RB1041	Gd	760.181	36.290	12	3.0	2	2.0	.10>	1.0>
68	RB1042	Gd	760.108	36.384	15	18.0	67	1.0>	.10>	1.0>
69	RB1043	Gd	760.163	36.497	226	5.0	55	1.0>	.10>	1.0>
70	RB1044	Gd	760.162	36.558	19	3.0	32	1.0>	.10>	1.0>
71	RB1045	Gd	760.171	36.622	97	3.0	5	1.0>	.20	1.0>
72	RB1046	Gd	760.190	36.658	41	331.0	27	1.0>	.10>	1.0>
73	RB1047	Gd	760.266	36.697	408	7.0	78	1.0>	.10>	1.0>
74	RB1048	Gd	760.384	36.752	654	33.0	80	3.0	.10>	1.0>
75	RB1049	Gd	760.534	36.880	81	3.0	4	67.0	.10>	1.0>
76	RB1050	Gd	760.649	36.925	57	4.0	3	1.0>	.20	1.0>
77	RB1051	Qp	760.643	34.530	10	2.0	43	1.0	.10	1.0>
78	RB1052	Gd	760.450	34.719	16	6.0	55	1.0	.10>	1.0>
79	RB1053	Gd	760.416	34.795	9	3.0	38	1.0>	.10>	1.0>
80	RB1054	Gd	760.381	34.842	68	40.0	18	1.0>	.10>	1.0>
81	RB1055	Gd	760.320	34.927	3	3.0	31	1.0>	.10>	1.0>
82	RB1056	Qp	760.239	35.004	29	3.0	46	2.0	.10>	1.0>
83	RB1057	Gd	760.198	35.042	97	52.0	43	1.0>	.10>	1.0>
84	RB1058	Gd	760.115	35.086	80	4.0	42	1.0>	.10>	1.0>
85	RB1059	Gd	760.041	35.123	8	5.0	28	1.0>	.10>	1.0>
86	RB1060	Gd	759.907	35.254	24	3.0	29	1.0>	.10>	1.0>
87	RB1061	Gd	759.907	35.347	44	2.0	23	1.0>	.10>	1.0>
88	RB1062	Gd	759.945	35.428	4	3.0	24	1.0>	.10>	1.0>
89	RC1001	Gd	760.865	35.805	233	2.0	9	1.0>	.30	14.0
90	RC1002	Qp	760.833	35.883	603	1.0>	13	1.0>	.10>	7.0
91	RC1007	Qp	760.874	36.401	493	1.0	26	1.0>	.10>	5.0
92	RC1008	Gd	760.829	36.478	60	2.0	3	1.0>	.10>	3.0
93	RC1009	Gd	760.787	36.554	611	4.0	44	1.0>	.10>	1.0>
94	RC1011	Qp	760.938	36.474	166	1.0	5	1.0>	.10>	34.0
95	RC1012	Gd	760.960	36.545	674	2.0	28	1.0>	.10>	1.0
96	RC1013	Gd	761.000	36.590	953	2.0	15	1.0>	.10>	2.0
97	RC1014	Gd	761.068	36.627	362	1.0	23	2.0	.10>	1.0>
98	RC1015	Gd	761.145	36.654	223	2.0	5	1.0	.10>	31.0
99	RC1016	Gd	761.231	36.675	131	3.0	4	1.0>	.10>	4.0
100	RC1017	Gd	761.046	36.707	105	2.0	10	9.0	4.00	10.0

List of Geochemical Analysis(3)

Ser. No.	Sample No.	Geol Unit	Location (km) X-coord	Y-coord	Cu ppm	Pb ppm	Zn ppm	Au ppb	Ag ppm	Mo ppm
101	RC1018	Gd	761.029	36.798	215	3.0	5	1.0>	1.20	1.0
102	RC1019	Gd	761.052	36.888	277	3.0	92	1.0>	.10>	1.0>
103	RC1020	Gd	761.075	36.972	152	3.0	79	1.0>	.10>	1.0>
104	RC1021	Gd	761.091	37.065	122	3.0	77	1.0>	.10>	1.0>
105	RC1026	Gd	760.754	36.112	1423	2.0	36	1.0>	1.60	2.0
106	RC1028	Gd	760.672	36.229	439	2.0	48	1.0>	.10>	1.0>
107	RC1029	Gd	760.631	36.280	1717	2.0	5	11.0	4.00	1.0>
108	RC1030	Gd	760.568	36.336	116	5.0	65	1.0>	.10>	1.0>
109	RC1031	Qp	760.732	35.722	95	1.0>	1	1.0>	.30	76.0
110	RC1033	Gd	760.689	35.578	1136	2.0	28	1.0>	.10>	1.0
111	RC1035	Gd	760.741	35.494	2514	1.0	8	1.0>	2.70	35.0
112	RC1037	Gd	760.703	35.334	147	2.0	15	1.0>	.10>	3.0
113	RC1039	Gd	760.784	35.204	76	1.0>	8	1.0>	.10>	3.0
114	RC1040	Gd	760.726	35.204	208	2.0	8	1.0>	.20	1.0>
115	RC1041	Qp	760.809	35.151	2287	2.0	5	1.0>	.70	1.0
116	RC1042	Gd	760.806	35.081	68	1.0	27	1.0>	.10>	4.0
117	RC1043	Gd	760.792	35.004	236	2.0	58	1.0>	.10>	1.0
118	RC1044	Gd	760.823	34.918	156	7.0	46	5.0	.50	1.0
119	RC1045	Gd	760.786	34.841	91	5.0	102	2.0	.60	1.0>
120	RC1046	Gd	760.806	34.746	79	4.0	73	1.0>	.10>	1.0>
121	RC1047	Gd	760.825	34.672	163	7.0	145	1.0>	.10>	1.0>
122	RC1048	Gd	760.884	34.622	162	4.0	155	1.0>	.10>	1.0>
123	RC1049	Gd	760.781	34.584	253	13.0	461	1.0>	.10>	1.0>
124	RC1050	Gd	760.813	34.506	124	413.0	366	1.0>	.10>	1.0>
125	RC1053	Gd	760.906	35.372	297	2.0	5	4.0	.10>	22.0
126	RC1054	Gd	760.662	35.431	464	3.0	26	1.0	.10>	1.0>
127	RC1055	Gd	760.604	35.481	410	2.0	8	1.0>	.10>	2.0
128	RC1056	Gd	760.527	35.521	920	2.0	67	1.0	1.40	1.0>
129	RC1057	Gd	760.443	35.508	111	2.0	61	1.0>	.10>	1.0>
130	RC1058	Gd	760.366	35.501	95	6.0	82	4.0	.50	1.0>
131	RC1059	Gd	760.297	35.481	349	33.0	1333	12.0	.70	2.0
132	RC1060	Gd	760.224	35.484	22	2.0	62	1.0	.10>	1.0>
133	RC1061	Gd	760.160	35.507	42	57.0	165	1.0	.10>	1.0>
134	RC1062	Gd	760.087	35.553	16	5.0	103	1.0>	.10>	1.0>
135	RC1063	Qp	760.382	35.561	112	3.0	57	1.0	.10>	1.0>
136	RC1064	Gd	760.324	35.623	40	2.0	74	3.0	.10>	1.0>
137	RC1065	Gd	760.263	35.650	100	2.0	108	4.0	.10>	2.0
138	RC1066	Gd	760.198	35.678	86	6.0	60	3.0	.10>	1.0>
139	RC1067	Gd	760.302	35.749	2180	2.0	31	6.0	.70	3.0
140	RC1068	Gd	760.387	35.758	95	2.0	80	2.0	.10>	1.0>
141	RC1069	Gd	760.474	35.768	104	3.0	47	1.0	.10>	1.0>
142	RC1070	Gd	760.531	35.703	317	3.0	91	2.0	.10>	1.0>
143	RC1071	Gd	760.555	35.632	7145	2.0	38	4.0	.10>	117.0
144	RC1073	Gd	761.487	36.040	48	2.0	4	2.0	3.70	3.0
145	RC1074	Gd	761.559	36.130	45	1.0	3	2.0	.10>	1.0
146	RC1075	Gd	761.587	36.207	36	1.0>	3	2.0	.10>	1.0>
147	RC1076	Gd	761.560	36.279	165	1.0	13	2.0	.10>	1.0>
148	RC1077	Gd	761.498	36.339	137	1.0	8	2.0	.10>	1.0>
149	RC1079	Gd	761.460	36.467	257	2.0	13	2.0	.10>	1.0>
150	RC1080	Gd	761.405	36.557	17	1.0	4	2.0	.10>	1.0>

List of Geochemical Analysis(4)

Ser. No.	Sample No.	Geol Unit	Location (km) X-coord	Y-coord	Cu ppm	Pb ppm	Zn ppm	Au ppb	Ag ppm	Mo ppm
151	RD1001	Gd	760.921	35.574	82	1.0>	2	41.0	.70	2.0
152	RD1002	Gd	760.980	35.536	169	1.0	8	17.0	.10>	19.0
153	RD1003	Gd	761.150	35.498	68	2.0	3	21.0	.40	5.0
154	RD1004	Gd	761.217	35.570	271	3.0	12	4.0	.20	1.0>
155	RD1005	Gd	761.311	35.644	34	1.0>	2	2.0	.10>	1.0
156	RD1006	Gd	761.331	35.717	24	1.0	4	3.0	.10>	1.0>
157	RD1007	Gd	761.324	35.795	31	3.0	2	2.0	.10>	3.0
158	RD1008	Gd	761.302	35.899	145	2.0	5	3.0	.10>	1.0>
159	RD1009	Gd	761.282	35.990	23	2.0	2	2.0	.10>	1.0
160	RD1010	Gd	761.263	36.061	24	1.0>	2	5.0	.10>	1.0>
161	RD1011	Gd	761.247	36.128	86	8.0	2	21.0	.10>	2.0
162	RD1012	Gd	761.248	36.182	110	3.0	7	4.0	.10>	1.0>
163	RD1013	Gd	761.250	36.282	40	1.0	3	3.0	.10>	2.0
164	RD1014	Qp	761.247	36.361	35	1.0	4	1.0	.10>	1.0>
165	RD1015	Gd	761.263	36.451	35	2.0	2	6.0	.10>	1.0
166	RD1016	Gd	761.283	36.549	50	2.0	2	17.0	.10>	1.0>
167	RD1017	Qp	761.373	36.691	173	3.0	6	47.0	11.20	1.0>
168	RD1018	Gd	761.313	36.926	189	7.0	120	2.0	.10>	1.0>
169	RD1019	Gd	761.252	37.006	218	4.0	247	2.0	.10>	1.0>
170	RD1020	Gd	761.514	35.714	49	2.0	4	17.0	.10>	1.0
171	RD1021	Gd	761.586	35.799	21	1.0	3	1.0	.10>	1.0>
172	RD1022	Gd	761.629	35.886	43	2.0	4	2.0	.10>	3.0
173	RD1023	Gd	761.680	35.972	38	2.0	3	2.0	.10>	20.0
174	RD1024	Gd	761.740	36.050	46	2.0	2	7.0	.10>	18.0
175	RD1025	Gd	761.820	36.168	46	2.0	6	5.0	.10>	34.0
176	RD1026	Gd	761.876	36.224	358	22.0	5	12.0	.10>	7.0
177	RD1027	Gd	761.873	36.307	177	4.0	5	2.0	.10>	1.0>
178	RD1028	Gd	761.742	36.558	31	7.0	2	39.0	.30	13.0
179	RD1029	Gd	761.697	36.622	11	1.0>	2	2.0	.10>	2.0
180	RD1030	Gd	761.549	36.769	6	11.0	2	2.0	.10>	1.0>
181	RD1031	Gd	760.880	34.733	453	7.0	38	18.0	8.00	1.0>
182	RD1032	Gd	760.938	34.741	19	3.0	383	1.0>	.10>	1.0>
183	RD1033	Gd	760.994	34.734	27	9.0	288	1.0>	.10>	1.0>
184	RD1034	Gd	761.080	34.716	7	4.0	81	1.0>	.10>	1.0>
185	RD1035	Gd	761.141	34.682	15	15.0	4	1.0>	.10>	4.0
186	RD1036	Gd	761.203	34.663	58	9.0	60	1.0>	.10	1.0>
187	RD1037	Gd	761.256	34.588	49	4.0	4	25.0	7.10	2.0
188	RD1038	Gd	761.248	34.525	98	83.0	83	1.0>	.10>	1.0>
189	RD1039	Gd	761.283	34.698	26	6.0	80	1.0>	.10>	1.0>
190	RD1040	Gd	761.343	34.790	75	2.0	12	1.0>	.10>	1.0>
191	RD1041	Gd	761.422	34.864	107	4.0	4	7.0	.10>	1.0>
192	RD1042	Gd	761.502	35.064	51	2.0	2	1.0>	.10>	1.0>
193	RD1043	Dp	761.569	35.093	43	2.0	3	1.0>	.10>	1.0>
194	RD1044	Dp	761.652	35.118	50	2.0	28	1.0>	.10>	1.0>
195	RD1045	Dp	761.728	35.158	26	2.0	3	1.0	.10>	2.0
196	RD1046	Dp	761.770	35.230	38	1.0	5	2.0	.10>	3.0
197	RD1047	Gd	761.816	35.308	24	1.0>	2	1.0>	.10>	4.0
198	RD1048	Gd	761.904	35.383	181	4.0	15	1.0	.10>	1.0
199	RD1049	Gd	761.975	35.416	60	1.0	3	1.0>	.10>	4.0
200	RD1050	Gd	762.017	35.465	80	1.0>	3	7.0	.10>	1.0>

List of Geochemical Analysis(5)

Ser. No.	Sample No.	Geol Unit	Location (km) X-coord	Location (km) Y-coord	Cu ppm	Pb ppm	Zn ppm	Au ppb	Ag ppm	Mo ppm
201	RD1051	Gd	762.013	35.564	55	1.0	2	3.0	.20	1.0>
202	RD1052	Gd	762.012	35.652	57	2.0	4	1.0>	.10>	6.0
203	RD1053	Gd	762.064	35.722	33	2.0	3	1.0>	.10>	1.0>
204	RD1054	Gd	762.102	35.774	59	2.0	3	79.0	12.50	1.0>
205	RD1055	Gd	762.155	35.831	113	4.0	12	9.0	.30	1.0>
206	RD1056	Gd	762.132	36.085	59	20.0	13	3.0	.20	1.0>
207	RD1057	Gd	762.060	36.163	121	16.0	10	3.0	.10>	1.0>
208	RD1066	Qp	761.110	35.219	133	1.0>	11	1.0>	.10>	4.0
209	RD1067	Gd	761.403	35.149	155	2.0	2	8.0	1.50	17.0
210	RD1068	Dp	761.419	35.256	754	4.0	23	1.0	.10>	2.0
211	RD1069	Gd	761.345	35.273	139	1.0	4	16.0	.10>	42.0
212	RD1070	Gd	761.275	35.292	103	1.0	2	1.0>	.10>	27.0
213	RD1071	Qp	761.188	35.294	120	1.0	7	35.0	1.30	33.0
214	RD1072	Dp	761.506	35.275	111	2.0	3	2.0	.10>	15.0
215	RD1073	Dp	761.572	35.294	128	1.0	2	1.0>	.10>	20.0
216	RE1011	Gd	761.403	35.966	45	2.0	2	1.0>	.10>	2.0
217	RE1012	Gd	761.369	36.050	33	1.0	5	1.0>	.10>	1.0>
218	RE1013	Gd	761.371	36.135	107	1.0	8	1.0>	.10>	1.0>
219	RE1014	Gd	761.362	36.237	63	1.0	7	1.0>	.10>	1.0>
220	RE1015	Gd	761.337	36.311	329	2.0	15	1.0>	.10>	1.0>
221	RE1019	Gd	761.751	35.714	200	5.0	6	1.0>	.70	15.0
222	RE1020	Gd	761.800	35.832	78	1.0	2	1.0>	.10>	9.0
223	RE1022	Gd	761.836	35.979	107	2.0	5	2.0	.10>	26.0
224	RE1023	Gd	761.886	36.067	31	3.0	2	1.0>	.10>	100.0
225	RE1024	Gd	761.255	35.580	160	1.0	5	2.0	.10>	6.0
226	RE1025	Gd	761.268	35.510	84	2.0	3	1.0>	.10>	1.0>
227	RE1026	Gd	761.278	35.434	58	2.0	1	1.0	.10>	3.0
228	RE1027	Gd	761.339	35.552	71	1.0>	2	3.0	.10>	2.0
229	RE1028	Gd	760.813	34.781	377	1.0	138	1.0>	.10>	1.0>
230	RE1029	Gd	760.943	34.921	51	3.0	45	1.0>	.10>	1.0>
231	RE1030	Gd	760.953	35.001	64	1.0>	2	1.0>	.10>	6.0
232	RE1031	Qp	760.943	35.084	41	1.0>	1	1.0>	.60	12.0
233	RE1032	Gd	760.966	35.167	168	1.0	2	1.0>	.50	56.0
234	RE1033	Qp	761.009	35.253	52	1.0>	1	1.0>	.10>	16.0
235	RE1034	Gd	761.009	35.330	139	1.0	2	32.0	.10>	46.0
236	RE1035	Gd	761.043	35.409	135	3.0	3	10.0	.10>	24.0
237	RE1036	Qp	761.450	35.101	141	2.0	7	1.0>	.10>	1.0
238	RE1037	Dp	761.500	35.157	195	3.0	18	1.0>	.10>	1.0>
239	RE1038	Dp	761.574	35.220	92	1.0	3	49.0	.10>	8.0
240	RE1039	Dp	761.630	35.360	46	1.0	2	2.0	.10>	15.0
241	RE1040	Gd	761.696	35.462	65	2.0	3	16.0	.10>	13.0
242	RE1041	Gd	761.737	35.599	115	2.0	8	6.0	.10>	8.0
243	RE1042	Gd	761.850	35.670	67	4.0	2	1.0>	.10>	7.0
244	RE1043	Gd	761.919	35.790	36	2.0	4	1.0>	.10>	4.0
245	RE1044	Gd	761.955	35.944	25	2.0	2	1.0>	.10>	2.0
246	RE1045	Dp	761.531	35.109	136	2.0	3	1.0>	.10>	4.0
247	RE1046	Dp	761.602	35.128	151	1.0>	4	1.0>	.10>	5.0
248	RE1047	Dp	761.669	35.180	114	1.0	15	15.0	.10>	2.0
249	RE1048	Gd	761.702	35.249	302	2.0	20	1.0>	.10>	4.0
250	RE1049	Dp	761.726	35.324	199	2.0	13	1.0>	.10>	1.0>

List of Geochemical Analysis(6)

Ser. No.	Sample No.	Geol Unit	Location (km) X-coord	Location (km) Y-coord	Cu ppm	Pb ppm	Zn ppm	Au ppb	Ag ppm	Mo ppm
251	RE1050	Dp	761.756	35.381	212	2.0	13	1.0>	.20	18.0
252	RE1051	Gd	761.798	35.433	290	1.0	3	1.0>	2.30	124.0

List of Geochemical Analysis(1)

Ser. No.	Sample No.	Geol Unit	Location (km) X-coord	Location (km) Y-coord	To-Cu ppm	So-Cu ppm	Pb ppm	Zn ppm	Au ppb	Ag ppm	Mo ppm
1	RA1001	Gd	760.766	35.774	16082	867	9	4.0	29.0	4.20	21.0
2	RA1002	Gd	760.662	35.842	266	173	9	19.0	1.0>	.10>	14.0
3	RA1003	Qp	760.532	35.862	236	181	22	157.0	1.0>	.10>	1.0>
4	RA1004	Gd	760.474	35.924	4916	1293	11	41.0	12.0	2.10	23.0
5	RA1005	Gd	760.457	35.953	745	353	12	76.0	1.0>	.10>	44.0
6	RA1006	Gd	760.434	35.962	1282	281	13	116.0	1.0>	.10>	1.0>
7	RA1011	Gd	760.403	36.014	2018	174	13	61.0	1.0>	.20	1.0>
8	RA1012	Gd	760.397	36.107	132	115	20	119.0	1.0>	.10>	1.0>
9	RA1013	Qp	760.379	36.159	179	147	35	108.0	1.0>	.10>	1.0>
10	RA1014	Gd	760.359	36.196	175	142	30	165.0	1.0>	.10>	1.0>
11	RA1017	Gd	760.361	36.407	7435	1223	18	46.0	3.0	3.50	1.0>
12	RA1018	Gd	760.447	36.516	564	334	16	107.0	1.0>	.10>	1.0>
13	RA1021	Gd	760.534	36.679	216	163	14	146.0	1.0>	.10>	1.0>
14	RC1003	Gd	760.831	35.961	965	568	10	5.0	1.0	2.00	31.0
15	RC1004	Gd	760.848	36.054	3638	837	11	7.0	1.0>	.10>	2.0
16	RC1005	Gd	760.876	36.167	9422	1575	12	21.0	2.0	.80	85.0
17	RC1006	Qp	760.939	36.265	607	568	12	13.0	1.0>	.10>	4.0
18	RC1010	Gd	760.921	36.313	5254	2521	12	15.0	34.0	3.30	15.0
19	RC1022	Gd	760.909	35.999	572	484	12	20.0	1.0>	.10>	8.0
20	RC1023	Gd	760.987	36.027	1256	1233	10	19.0	1.0>	.80	13.0
21	RC1024	Gd	761.026	36.102	204	154	9	11.0	1.0>	.10	1.0>
22	RC1025	Qp	760.790	36.067	3654	1326	11	7.0	13.0	1.50	30.0
23	RC1027	Gd	760.695	36.180	2693	912	12	58.0	1.0>	.10>	3.0
24	RC1032	Gd	760.711	35.658	4099	3959	13	40.0	1.0>	.10>	1.0>
25	RC1034	Gd	760.793	35.525	10815	2973	12	11.0	20.0	3.80	21.0
26	RC1036	Gd	760.726	35.411	548	289	10	33.0	1.0>	.10>	4.0
27	RC1038	Gd	760.729	35.292	443	236	13	81.0	1.0>	.10>	1.0>
28	RC1051	Gd	760.809	35.291	9607	1625	9	6.0	1.0>	1.50	49.0
29	RC1052	Gd	760.860	35.320	3539	1688	10	7.0	2.0	2.90	30.0
30	RC1072	Gd	760.570	35.571	5926	2065	7	25.0	1.0>	.50	2.0
31	RC1078	Gd	761.506	36.431	3414	3175	9	24.0	1.0>	.20	7.0
32	RD1058	Gd	760.894	34.820	353	350	16	100.0	1.0>	.10>	1.0>
33	RD1059	Gd	760.999	34.817	324	324	13	86.0	1.0>	.10>	1.0>
34	RD1060	Gd	761.009	34.927	160	136	17	109.0	1.0>	.10>	1.0>
35	RD1061	Gd	761.033	35.007	179	158	15	63.0	1.0>	.10>	2.0
36	RD1062	Gd	761.080	35.085	413	277	13	23.0	1.0>	.10>	23.0
37	RD1063	Gd	761.166	35.143	4679	1449	11	4.0	1.0>	.90	13.0
38	RD1064	Gd	761.222	35.120	639	584	10	19.0	1.0>	.10>	1.0>
39	RD1065	Gd	761.279	35.120	8069	537	10	5.0	1.0>	.30	2.0
40	RE1001	Gd	760.838	35.745	181	147	9	14.0	1.0>	.10>	2.0
41	RE1002	Gd	760.914	35.718	8580	702	10	64.0	3.0	3.30	60.0
42	RE1003	Gd	761.001	35.669	450	273	9	10.0	1.0>	.10>	1.0>
43	RE1004	Gd	761.083	35.648	131	128	10	4.0	5.0	.30	8.0
44	RE1005	Qp	761.150	35.619	377	356	10	24.0	1.0>	.20	5.0
45	RE1006	Qp	761.230	35.658	131	107	10	11.0	5.0	.10>	13.0
46	RE1007	Gd	761.421	35.636	200	185	13	2.0	1.0	.10>	5.0
47	RE1008	Gd	761.418	35.725	443	362	10	15.0	2.0	.10>	1.0
48	RE1009	Gd	761.401	35.791	408	240	12	19.0	1.0>	.10>	1.0>
49	RE1010	Gd	761.392	35.876	128	102	16	9.0	2.0	.30	8.0
50	RE1016	Gd	761.492	35.627	339	298	13	4.0	3.0	.60	7.0

List of Geochemical Analysis(2)

Ser. No.	Sample No.	Geol Unit	Location (km) X-coord	Location (km) Y-coord	To-Cu ppm	So-Cu ppm	Pb ppm	Zn ppm	Au ppb	Ag ppm	Mo ppm
51	RE1017	Gd	761.578	35.644	153	133	7	1.0>	3.0	1.20	10.0
52	RE1018	Gd	761.668	35.677	575	550	13	9.0	1.0>	.20	38.0

Table of ratio of T-Cu and So-Cu.

Ser. No.	Sample No.	R = (SC/TC)x100	Ser. No.	Sample No.	R = (SC/TC)x100	Ser. No.	Sample No.	R = (SC/TC)x100
1	RA1001	5.4	21	RC1024	75.5	41	RE1002	8.2
2	RA1002	65.0	22	RC1025	36.3	42	RE1003	60.7
3	RA1003	76.7	23	RC1027	33.9	43	RE1004	97.7
4	RA1004	26.3	24	RC1032	96.9	44	RE1005	94.4
5	RA1005	47.4	25	RC1034	27.5	45	RE1006	81.7
6	RA1006	21.9	26	RC1036	52.3	46	RE1007	92.5
7	RA1011	8.6	27	RC1038	53.3	47	RE1008	81.7
8	RA1012	87.1	28	RC1051	16.9	48	RE1009	58.8
9	RA1013	82.1	29	RC1052	47.7	49	RE1010	79.7
10	RA1014	81.1	30	RC1072	34.8	50	RE1016	87.9
11	RA1017	16.4	31	RC1078	93.0	51	RE1017	86.9
12	RA1018	59.2	32	RD1058	99.2	52	RE1018	95.7
13	RA1021	75.5	33	RD1059	100.0			
14	RC1003	58.9	34	RD1060	85.0			
15	RC1004	23.0	35	RD1061	88.1			
16	RC1005	16.7	36	RD1062	67.1			
17	RC1006	93.6	37	RD1063	31.0			
18	RC1010	48.0	38	RD1064	91.4			
19	RC1022	84.6	39	RD1065	6.7			
20	RC1023	98.2	40	RE1001	81.2			

R : ratio, TC : total copper, SC : soluble copper.

Ser. No.	Factor 1	Factor 2	Factor 3
1	-.534	-.184	-.071
2	.622	-.582	-.702
3	.702	.155	.357
4	-.015	-1.030	-.642
5	.628	-.030	-.670
6	.581	-.248	-.729
7	.689	-.351	1.176
8	.180	-.444	-.799
9	.326	-.717	-.798
10	-.040	-.611	-.785
11	.249	-.494	-.742
12	.279	-.686	-.792
13	1.137	-.427	-.686
14	1.199	-.881	-.870
15	.618	-.697	-.780
16	.956	-.736	-.775
17	1.351	-.095	-.655
18	1.429	-.655	-.620
19	.961	-.379	-.597
20	.973	-.296	-.725
21	-1.101	-2.551	.704
22	.648	-1.173	-.556
23	.966	-.517	-.603
24	.869	-.522	-.639
25	.447	-.152	-.710
26	1.244	-.164	-.612
27	-.540	-.286	-.840
28	-.188	-.626	-.712
29	.482	-.266	-.738
30	.823	.741	2.450
31	.488	-.563	-.750
32	.589	-.608	-.710
33	.587	.378	-.563
34	.432	-.192	-.570
35	.779	.598	.467
36	.104	-.968	-.790
37	.239	-.825	-.746
38	.555	-1.402	-.808
39	1.014	-1.151	-.023
40	.439	-1.000	-.821
41	1.049	-.216	-.701
42	.633	-.223	-.654
43	.857	-.788	-.680
44	1.283	-.365	-.663
45	1.429	-.169	-.605
46	1.196	.039	-.627
47	1.220	-.229	-.582
48	1.136	-.611	-.651
49	1.430	-.519	.314
50	1.113	-.342	-.664

Ser. No.	Factor 1	Factor 2	Factor 3
51	-.903	-.692	-.015
52	-1.192	-1.041	.504
53	-.649	-1.021	-.836
54	-.470	-.646	.478
55	-.453	-.431	-.756
56	.266	.349	-.668
57	.826	-.220	-.645
58	.901	-.312	.506
59	1.091	-.264	-.645
60	1.164	-.229	1.711
61	.904	-.527	-.722
62	.473	-.489	1.012
63	.536	-.250	.438
64	.204	.042	-.441
65	.310	-1.519	-.627
66	.252	-.672	-.705
67	1.326	.824	.399
68	.858	-1.153	-.595
69	.165	-.777	-.737
70	1.087	-.165	-.619
71	.238	.200	.039
72	-.016	-2.171	-.424
73	-.090	-1.089	-.775
74	-.363	-1.773	.251
75	1.010	.472	2.181
76	.359	.295	.117
77	1.310	-.086	.017
78	1.093	-.617	-.251
79	1.342	-.158	-.606
80	.184	-1.182	-.501
81	1.711	.006	-.546
82	1.075	-.305	.090
83	.030	-1.616	-.580
84	.552	-.502	-.684
85	1.286	-.262	-.552
86	1.006	-.152	-.619
87	.869	.046	-.639
88	1.610	.067	-.535
89	-1.138	.781	-.159
90	-.636	1.167	-.952
91	-.572	.585	-.949
92	.151	1.088	-.609
93	-.136	-.694	-.764
94	-.851	1.645	-.911
95	-.277	-.107	-.812
96	-.629	.221	-.824
97	.406	.176	.007
98	-.982	1.314	-.506
99	-.275	.813	-.668
100	-.995	.561	2.501

Ser. No.	Factor 1	Factor 2	Factor 3
101	-.603	.129	.673
102	.195	-.751	-.812
103	.396	-.648	-.776
104	.470	-.620	-.766
105	-1.421	-.400	.471
106	.101	-.400	-.790
107	-.960	-.089	2.798
108	.393	-.776	-.726
109	-1.170	2.549	-.123
110	-.454	-.152	-.832
111	-2.545	.921	.540
112	-.128	.470	-.785
113	.333	1.327	-.766
114	.059	.149	-.049
115	-1.227	.142	.350
116	.172	.696	-.861
117	.089	-.261	-.837
118	-.233	-.844	1.432
119	.129	-1.098	.994
120	.565	-.687	-.732
121	.230	-1.217	-.795
122	.333	-1.002	-.826
123	-.011	-1.906	-.886
124	-.390	-3.236	-.686
125	-.841	1.233	.266
126	.064	-.362	-.342
127	-.353	.505	-.737
128	-.725	-.849	.864
129	.571	-.362	-.760
130	.177	-1.081	1.324
131	-.941	-2.570	1.732
132	1.182	-.218	-.322
133	.381	-2.025	-.285
134	1.071	-.759	-.693
135	.558	-.503	-.358
136	1.083	-.315	.239
137	.354	-.219	.221
138	.624	-.777	.277
139	-1.314	-.197	1.461
140	.754	-.421	-.022
141	.580	-.432	-.338
142	.275	-.741	-.061
143	-2.430	.637	-.162
144	-.474	.665	1.853
145	.855	1.189	.212
146	1.280	1.353	.243
147	.663	.435	.087
148	.719	.614	.137
149	.389	.103	.101
150	1.415	1.028	.276

Ser. No.	Factor 1	Factor 2	Factor 3
151	.310	1.533	2.844
152	-.340	1.406	1.015
153	-.119	1.060	2.217
154	.093	-.155	1.057
155	1.068	1.644	.227
156	1.335	1.003	.485
157	.423	1.127	.225
158	.605	.478	.428
159	.953	1.089	.303
160	1.495	1.537	.794
161	.248	.565	1.544
162	.658	.221	.584
163	.707	1.353	.384
164	1.107	.956	-.129
165	.911	1.067	.887
166	1.110	.900	1.495
167	-.319	-.192	4.090
168	.304	-1.149	-.028
169	.366	-1.166	-.122
170	.902	.818	1.381
171	1.276	1.097	-.084
172	.395	1.038	.134
173	-.184	1.553	.017
174	-.107	1.666	.737
175	-.327	1.430	.408
176	-.860	-.033	1.053
177	.377	.161	.230
178	-.281	.970	2.487
179	1.225	1.890	.216
180	1.329	.332	.483
181	-.790	-1.239	3.270
182	1.124	-.998	-.838
183	.805	-1.399	-.777
184	1.386	-.512	-.650
185	.172	.317	-.515
186	.388	-.997	-.390
187	-.369	.259	3.552
188	-.047	-2.036	-.517
189	.871	-.794	-.680
190	.679	.218	-.602
191	.659	.296	.952
192	.782	.853	-.429
193	.846	.731	-.458
194	.829	-.031	-.661
195	.629	1.082	-.169
196	.564	1.268	.088
197	.609	1.954	-.623
198	.098	-.069	-.299
199	.181	1.444	-.662
200	1.124	1.301	.896

Ser. No.	Factor 1	2	3
201	.776	1.047	1.069
202	-.052	1.145	-.686
203	.936	.754	-.448
204	.134	.303	4.501
205	.334	-.226	1.707
206	.246	-.860	1.034
207	.306	-.622	.466
208	.055	1.233	-.837
209	-1.145	1.263	2.130
210	-.604	-.187	-.444
211	-.547	1.825	.989
212	-.628	1.944	-.794
213	-.969	1.333	2.695
214	-.454	1.399	-.001
215	-.605	1.860	-.779
216	.374	1.161	-.531
217	1.067	.877	-.524
218	.676	.618	-.610
219	.853	.708	-.578
220	.181	.015	-.677
221	-1.442	.485	.257
222	-.177	1.732	-.699
223	-.612	1.349	-.087
224	-.843	1.863	-.801
225	-.149	1.293	-.019
226	.619	.673	-.484
227	.209	1.468	-.133
228	.630	1.734	.367
229	.293	-.447	-.908
230	.757	-.364	-.686
231	.145	1.956	-.691
232	-.420	2.166	.328
233	-1.476	1.864	.053
234	-.114	2.417	-.698
235	-.524	2.087	1.422
236	-.599	1.332	.851
237	.232	.493	-.631
238	.289	-.173	-.655
239	.229	1.616	1.769
240	-.038	1.905	.038
241	-.037	1.441	1.165
242	-.147	.946	.559
243	-.291	1.102	-.612
244	.235	1.097	-.638
245	.573	1.212	-.509
246	-.220	1.079	-.662
247	-.076	1.610	-.770
248	.524	.744	1.080
249	-.461	.373	-.860
250	.350	.107	-.645

Ser. No.	Factor 1	2	3
251	-1.104	.754	-.369
252	-2.208	1.722	.546
253	-3.125	-.034	3.060
254	-1.094	.032	-.880
255	-.098	-1.762	-.765
256	-2.700	-.731	2.142
257	-1.845	-.398	-1.117
258	-.582	-1.584	-.825
259	-1.013	-1.525	-.231
260	.112	-1.579	-.723
261	-.093	-1.810	-.701
262	-.051	-1.885	-.745
263	-1.907	-1.899	1.882
264	-.342	-1.574	-.778
265	.012	-1.538	-.776
266	-2.478	.192	.987
267	-1.399	-.363	-.731
268	-3.348	-.261	.716
269	-1.024	-.304	-.768
270	-2.607	-.553	3.014
271	-1.222	-.294	-.858
272	-2.150	-.397	.182
273	-.064	-.537	-.287
274	-2.640	-.026	2.198
275	-1.412	-.996	-.934
276	-.992	-1.327	-.775
277	-3.041	-.458	2.755
278	-.942	-.530	-.855
279	-.228	-1.371	-.754
280	-3.391	.090	.351
281	-2.911	-.063	1.438
282	-1.909	-.835	.040
283	-1.998	-.533	-.388
284	-.184	-1.511	-.755
285	-.121	-1.364	-.747
286	.074	-1.497	-.730
287	-.400	-.971	-.798
288	-1.467	-.120	-.936
289	-2.659	-.039	.321
290	-.327	-.805	-.651
291	-2.003	-.430	-.019
292	-.336	-.251	-.689
293	-3.390	-.739	1.428
294	-.199	-.515	-.586
295	-.851	.330	1.305
296	-1.161	-.460	-.275
297	-.647	.246	.461
298	-.700	.444	-.197
299	-.305	-.527	.086
300	-.208	-.844	-.626

Ser. No.	Factor 1	2	3
301	-.998	-.152	.755
302	-1.357	.042	1.290
303	-1.259	1.090	1.725
304	-2.024	.157	-.349

Appendix 6 Analytical data of geochemical stream sediment samples

List of Geochemical Analysis(1)

Ser. No.	Sample No.	Geol Unit	Location (km) X-coord	Location (km) Y-coord	Cu ppm	Pb ppm	Zn ppm
1	SC1001	Gd	759.546	33.513	162	24.0	49
2	SC1002	Gd	759.503	33.698	98	13.0	36
3	SC1003	Gd	759.619	33.936	40	9.0	31
4	SC1004	Gd	759.484	34.202	47	6.0	26
5	SC1005	Gd	759.505	34.484	41	6.0	29
6	SC1006	Gd	759.581	33.937	40	5.0	24
7	SC1007	Gd	759.525	33.700	29	4.0	25
8	SC1008	Gd	758.572	37.418	16	3.0	20
9	SC1009	Gd	758.622	37.589	17	4.0	22
10	SC1010	Gd	758.996	37.534	14	3.0	18
11	SC1011	Gd	759.004	37.577	14	3.0	19
12	SC1012	Gd	759.163	37.697	15	3.0	19
13	SC1013	Gd	759.344	37.803	15	2.0	20
14	SC1015	Gd	759.400	37.889	13	3.0	20
15	SC1016	Gd	759.455	37.875	12	2.0	17
16	SC1017	Gd	759.626	37.956	11	2.0	16
17	SC1018	Gd	758.898	33.523	19	2.0	28
18	SC1019	Gd	758.367	33.648	22	2.0	34
19	SC1020	Gd	758.268	33.720	11	2.0	17
20	SC1021	Gd	758.297	33.750	53	2.0	26
21	SC1023	Gd	758.211	33.971	12	2.0	24
22	SC1024	Gd	758.153	34.119	8	2.0	21
23	SC1025	Gd	758.112	34.226	13	2.0	17
24	SC1026	Gd	758.145	34.211	50	3.0	24
25	SC1027	Gd	763.930	36.738	110	3.0	44
26	SC1028	Gd	763.994	36.458	30	4.0	76
27	SC1030	Gd	763.819	36.431	59	6.0	143
28	SC1031	Gd	763.743	36.174	75	7.0	186
29	SC1033	Gd	763.630	36.031	90	8.0	214
30	SC1034	Gd	763.483	35.952	17	5.0	35
31	SC1035	Gd	763.475	35.986	92	8.0	172
32	SC1036	Qp	763.194	35.851	136	12.0	234
33	SC1037	Qp	763.189	35.885	89	5.0	106
34	SC1038	Qp	763.989	34.119	27	8.0	82
35	SC1039	Gd	763.990	35.178	16	3.0	33
36	SD1001	Dp	761.932	33.574	77	14.0	128
37	SD1002	Dp	762.130	33.863	156	14.0	211
38	SD1003	Qp	762.253	33.828	36	9.0	91
39	SD1004	Qp	762.270	33.845	30	21.0	149
40	SD1005	Qp	762.491	34.207	26	19.0	165
41	SD1006	Gd	758.729	38.442	19	2.0	23
42	SD1007	Gd	758.467	38.708	21	2.0	21
43	SD1008	Gd	758.477	38.730	25	4.0	31
44	SD1009	Gd	760.015	36.475	641	4.0	40
45	SD1010	Gd	760.158	36.742	302	3.0	28
46	SD1011	Gd	760.348	36.899	29	2.0	22
47	SD1012	Gd	760.381	36.906	234	2.0	30
48	SD1013	Gd	760.611	37.039	141	2.0	30
49	SD1014	Gd	760.842	37.248	61	2.0	29
50	SD1015	Gd	760.851	37.218	358	7.0	39

List of Geochemical Analysis(2)

Ser. No.	Sample No.	Geol Unit	Location (km) X-coord	Location (km) Y-coord	Cu ppm	Pb ppm	Zn ppm
51	SD1016	Gd	762.177	37.011	865	3.0	35
52	SD1017	Gd	761.970	37.001	719	4.0	33
53	SD1018	Gd	761.570	37.212	1104	3.0	36
54	SD1019	Gd	761.765	37.079	848	4.0	37
55	SD1020	Gd	762.934	38.636	19	2.0	19
56	SD1021	Gd	762.931	38.606	13	2.0	19
57	SD1022	Gd	762.697	38.484	10	2.0	15
58	SD1023	Gd	762.470	38.419	11	2.0	18
59	SD1024	Gd	762.254	38.529	11	1.0	17
60	SD1025	Gd	762.099	38.559	11	2.0	19
61	SD1026	Gd	762.513	38.336	11	2.0	14
62	SE1001	Gd	761.703	33.591	52	16.0	115
63	SE1002	Dp	761.695	33.619	917	9.0	98
64	SE1003	Dp	761.576	34.076	41	18.0	701
65	SE1004	Qp	761.798	34.223	406	8.0	118
66	SE1005	Gd	759.652	36.404	443	4.0	49
67	SE1006	Qp	759.405	36.387	518	5.0	47
68	SE1007	Gd	759.398	36.417	52	3.0	27
69	SE1008	Gd	758.996	36.449	11	2.0	21
70	SE1009	Gd	758.864	36.341	277	3.0	37
71	SE1010	Gd	758.830	36.356	42	2.0	21
72	SE1011	Gd	758.836	36.478	10	2.0	18
73	SE1012	Gd	758.544	36.441	20	3.0	26
74	SE1013	Gd	758.558	36.479	47	3.0	22
75	SE1014	Gd	758.620	36.034	57	3.0	24
76	SE1015	Gd	758.589	36.002	10	3.0	17
77	SE1016	Gd	758.758	35.658	28	2.0	27
78	SE1017	Gd	758.685	35.572	56	2.0	22
79	SE1018	Gd	758.646	35.562	11	1.0	18
80	SE1019	Gd	758.778	35.211	19	2.0	23
81	SE1020	Gd	758.797	35.075	54	3.0	23
82	SE1021	Gd	758.838	35.068	26	2.0	25
83	SE1022	Gd	758.697	34.778	51	2.0	20
84	SE1023	Gd	758.740	34.715	36	1.0	23
85	SE1024	Gd	758.748	34.644	21	2.0	27
86	SE1025	Gd	758.501	34.468	53	1.0	23
87	SE1026	Gd	758.532	34.441	15	2.0	23
88	SE1027	Dp	761.763	34.306	140	5.0	21
89	SE1028	Gd	761.721	34.698	279	1.0	19
90	SE1029	Gd	761.754	34.694	107	5.0	18
91	SE1030	Gd	761.625	34.492	156	6.0	21
92	SE1031	Gd	761.603	34.474	382	5.0	37
93	SE1032	Gd	763.935	36.922	131	3.0	45
94	SE1033	Gd	763.651	36.947	17	2.0	20
95	SE1034	Gd	763.626	37.128	8	1.0	15
96	SE1035	Gd	763.405	37.144	11	2.0	24
97	SE1036	Gd	763.176	37.189	8	2.0	20
98	SE1037	Gd	763.165	37.217	12	3.0	23
99	SE1038	Gd	763.217	37.252	11	3.0	23
100	SE1039	Gd	763.042	37.462	15	4.0	29

List of Geochemical Analysis(3)

Ser. No.	Sample No.	Geol Unit	Location (km) X-coord	Location (km) Y-coord	Cu ppm	Pb ppm	Zn ppm
101	SE1040	Gd	763. 069	37. 484	9	3. 0	19
102	SE1041	Gd	763. 491	38. 033	15	3. 0	25
103	SE1042	Gd	763. 416	38. 632	10	2. 0	17
104	SE1043	Gd	763. 542	38. 819	9	2. 0	16
105	SE1044	Gd	763. 525	38. 849	17	3. 0	24
106	SE1045	Gd	763. 476	38. 787	9	1. 0>	14
107	SF1001	Gd	758. 913	38. 870	10	2. 0	13
108	SF1002	Gd	758. 932	38. 669	10	2. 0	13
109	SF1003	Gd	758. 968	38. 652	12	2. 0	14
110	SF1004	Gd	758. 932	38. 524	10	1. 0	12
111	SF1005	Gd	758. 782	38. 433	10	2. 0	11
112	SF1006	Gd	762. 255	37. 589	56	6. 0	34
113	SF1007	Gd	762. 232	37. 545	2828	14. 0	111
114	SF1008	Gd	762. 256	37. 315	1095	5. 0	63
115	SF1009	Gd	762. 276	37. 329	552	6. 0	79
116	SF1010	Gd	762. 404	37. 157	682	6. 0	76
117	SF1011	Gd	762. 358	37. 030	1378	2. 0	70
118	SF1012	Gd	762. 474	36. 944	556	6. 0	91
119	SF1013	Gd	762. 453	36. 924	776	3. 0	33
120	SF1014	Gd	762. 841	38. 765	12	2. 0	17
121	SF1015	Gd	762. 722	38. 958	9	2. 0	15
122	SF1016	Gd	762. 540	39. 057	11	2. 0	17
123	SF1017	Gd	762. 553	39. 086	16	3. 0	25
124	SF1018	Gd	762. 397	39. 302	14	3. 0	17
125	SF1019	Gd	762. 253	39. 392	19	4. 0	32
126	SF1020	Gd	762. 245	39. 359	12	2. 0	18
127	SG1001	Gd	760. 802	34. 585	2118	4. 0	62
128	SG1003	Gd	760. 627	34. 331	2195	5. 0	87
129	SG1004	Gd	760. 611	34. 377	52	13. 0	148
130	SG1005	Gd	760. 562	34. 348	48	5. 0	46
131	SG1006	Gd	760. 492	34. 019	1861	5. 0	85
132	SG1007	Gd	760. 463	34. 014	27	3. 0	31
133	SG1008	Gd	760. 596	33. 650	2144	5. 0	109
134	SG1009	Gd	758. 440	38. 174	82	3. 0	19
135	SG1010	Gd	758. 475	38. 166	22	2. 0	21
136	SG1011	Gd	758. 325	38. 019	11	2. 0	13
137	SG1012	Gd	758. 276	37. 957	18	2. 0	19
138	SG1013	Gd	758. 461	37. 663	83	3. 0	19
139	SG1014	Gd	758. 488	37. 483	43	2. 0	18
140	SG1015	Gd	758. 251	37. 371	17	2. 0	16
141	SG1016	Gd	758. 264	37. 058	46	3. 0	20
142	SG1017	Gd	758. 225	37. 051	11	2. 0	20
143	SG1018	Gd	763. 651	36. 910	219	2. 0	46
144	SG1019	Gd	763. 522	36. 788	5	2. 0	17
145	SG1020	Gd	763. 516	36. 819	300	4. 0	56
146	SG1021	Gd	763. 213	36. 908	354	3. 0	45
147	SG1022	Gd	762. 953	36. 835	330	2. 0	40
148	SG1023	Gd	762. 944	36. 875	633	4. 0	54
149	SG1024	Gd	763. 985	37. 271	22	3. 0	20
150	SG1025	Gd	763. 660	37. 695	14	3. 0	19

List of Geochemical Analysis(4)

Ser. No.	Sample No.	Geol Unit	Location (km) X-coord	Location (km) Y-coord	Cu ppm	Pb ppm	Zn ppm
151	SG1026	Gd	763.688	37.700	8	2.0	12
152	SG1027	Gd	763.464	37.984	16	3.0	24
153	SG1028	Gd	763.454	38.016	8	2.0	13
154	SG1029	Gd	763.264	38.332	8	2.0	14
155	SG1030	Gd	763.298	38.342	11	2.0	13
156	SC1014	Gd	759.359	37.830	11	2.0	17
157	SC1022	Gd	758.288	33.856	11	2.0	23
158	SC1029	Gd	763.828	36.468	8	3.0	16
159	SC1032	Gd	763.769	36.320	68	10.0	181
160	SG1002	Gd	760.754	34.546	39	5.0	38

Appendix 7 Drilling log of MJJ–1(1:200)

Depth (m)	Column	Structure	Description	Alteration: Silicification	Argillization	Chloritization	Epidotization	Ore Minerals: Chalcopyrite	Bornite	Chalcocite	Molybdenite	Pyrite	Assy Results: Depth (m)	Core length (cm)	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm
			0-3.00 pink(hm)-clay with qtz-pr gravel																	
3.00																				
			3.00-7.00 gravel of qtz por in yellowish clay																	
7.00			7.00-12.50 weathered qtz-por(qtz 1cm diameter)																	
10																				
12.50																				
			12.05-41.60 gray granodiorite																	
			mafic minerals epi>chl																	
			epi-films/stringer(ntwk)																	
			12.00-14.70 fine brittle																	
			15.30-15.60 limo & clay																	
			-16.20 epi-limo stringer																	
			-16.65 limo & clay																	
			-17.50 dk inclusion																	
			-17.90 dk inclusion																	
			18.20-18.50 epi-sericite(?)																	
			-18.25 dk inclusion																	
20			-19.10 dk inclusion																	
			~~20.60-21.10 fine brittle~~																	
			20.60-22.00 limo-epi stringer,																	
		∠ 20 C	pl sericite(?)																	
			22.35-23-20 fine brittle																	
			limo-epi stringer																	
		∠ 45 V	pl sericite(?)																	
			-22.90 qtz vein (W:2 cm)																	
			23.90-24.80 limo-epi stringer																	
			23.90-26.10 fine brittle,																	
			pl sericite(?)																	
			27.60-28.30 fine brittle																	
		∠ 45 C	27.60-29.80 epi sringer,pl sericite(?)																	
30		∠ 55 F																		
		∠ 30 VL	30.85 qtz veinlet with Py spec(W:1 cm)																	
			30.90-31.80 fine brittle, limo-clay																	
		∠ 45 C	32.10-32.30 pl sericite(?), arg(1)																	
			32.80-32.90 fine brittle																	
			-33.20 dk inclusion																	
		∠ 30 F	33.80-33.90 arg(2)																	
			33.80-34.50 fine brittle																	
		∠ 50 F																		
		∠ 30 S																		
			37.00-38.00 fine brittle, arg(1)																	
		∠ 70 C																		
40		∠ 20 F																		

Depth (m)	Column	Structure	Description	Silicification	Argillization	Chloritization	Epidotization	Chalcopyrite	Bornite	Chalcocite	Molybdenite	Pyrite	Depth (m)	Core length (cm)	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm
41.60			41.60-46.60 limo-clay zone																	
			sheared zone																	
46.60		30 F	46.60-47.30 fine brittle, arg(2)																	
			limo-epi ntwk and/or film																	
		40 C	47.70-48.00 Py-epi stringer																	
48.10			-47.90 blk inclusion																	
			48.10-49.90 fine brittle, arg(2)																	
			limo-clay ntwk & film																	
50 49.90			-49.55 specularite																	
		40 F	Gray granodiorite																	
		45 F	epi stringer & ntwk with diss of Py & Cp																	
		25 S																		
			52.60-53.00 Py & epi stringer																	
			53.00-53.40 arg(1)																	
		70 F	53.60-54.00 Py-clay film																	
		70 S	-54.60 Py-hm-epi film																	
			54.80-54.90 arg(2)																	
		60 F																		
		80 F	-55.00 Py-hm-epi-qtz v-let																	
			55.80-56.00 Cp-Py-epi film																	
		45 F	56.60-56.80 Py-epi-chl film																	
			57.55-57.70 Cp-epi stringer																	
		30 S	-57.90 Py-epi film																	
		70 F	58.20-58.30 Py-epi-chl film																	
		80 S	-59.30 Py-epi stringer																	
60		60 F	-59.90 Py-epi-chl film																	
		80 F	-60.15 Py-epi chl film																	
		60 F	-60.30 Cp-Py-epi film																	
		60 F	60.50-60.70 Py-epi-chl film & diss																	
		60 F	61.30-61.40 Py-epi-chl film & diss																	
		45 VL	61.80-61.90 Py-epi-chl film & diss																	
			62.30-62.70 Py-epi-chl film & diss																	
		40 F	-62.60 Py-epi-chl-qtz v-let(W:1cm)																	
		45 F																		
			63.40-63.50 Cp-Py stringer & diss																	
		30 S	-63.65 Py-epi film																	
		55 S	64.80-65.00 Py-Cp-mal-(po) stringer																	
			-65.60 Py-(Cp)-epi stringer																	
		45 F	65.70-65.80 Py-epi stringer																	
		30 F	-65.90 Py diss																	
		40 S	66.05-66.30 Py-epi film																	
		20 F	67.40-67.50 Py-Cp stringer & diss																	
		70 F	67.80-67.90 Cp-Py-chl film																	
			-68.70 Py-Cp diss																	
70		5 S	68.85-69.70 Py-epi-(chl) stringer or film																	
		60 S	70.40-70.85 Py-Cp-epi-chl stringer or film	3		1	1	S				S/F								
		55 S				2	2	S				S/F								
		60 S																		
		75 S	71.05-71.95 Py-epi stringer or film	3		2	2													
		50 F																		
			72.05-72.25 Py-epi film>diss	2		1	1	F				S/F								
		20 F	72.40-72.50 Py-epi film									S/F	72.8	100	Tr	Tr	27	152	200	<1
		60 F	72.50-72.60 Py-Cp-epi film	2		2	2	F/D												
			73.00-73.40 Py-Cp-epi-chl film & diss										73.8	100	Tr	Tr	24	89	137	<1
			73.40-73.80 Py-hm-epi-chl film	2		2	2					F/D								
		30 VL	-73.85 Py-epi-chl film &diss										74.8	100	Tr	Tr	28	45	189	<1
		60 V	74.75-74.85 Py-Cp-epi-chl stringer & diss	3		2	2	F/D				F/D								
		40 F	75.0Py-Mo-Cp-qtz vlet(W:6mm)75.60qtz vein(W:3cm)										76.2	40	Tr	Tr	11	40	77	<1
		35V L	-76.85 Cp diss & film	3		3	3	F/D			VL	F/D	76.6	10	zz	zz	14	31	81	]
			76.90-77.05 Cp-Py-epi-chl stringer & diss			3	3	VL					77.0	50	zz	zz	181	34	91	20
			-77.95 Cp-Py-qtz V (W:1.4 cm)	3		2	2					F/D								
		90 F	78.00-78.20 Py-Cp film & diss										77.7	10	zz	zz	13	36	214	]
		65 F		2		1	1	F				F/D	78.0	20	zz	zz	12	27	99	]
		75 F	-78.90 Cp-chl film																	
80		80 F	79.55-79.80 Py-Cp film & diss	2		1	1	F/D				F/D	79.5	30	zz	zz	63	30	124	]

Depth (m)	Column	Structure	Description	Alteration				Ore Minerals					Assay Results							
				Silicification	Argillization	Chloritization	Epidotization	Chalcopyrite	Bornite	Chalcocite	Molybdenite	Pyrite	Depth (m)	Core length (cm)	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm
	+	30 S 75 F	80.30-80.40 Py-Cp-epi-chl stringer & diss	2		1	1	F/D				F/D								
			80.70-80.90 Cp-chl film			0	0	F				F								
	+	80 S	81.70-81.90 Py-epi-chl stringer & diss	2		1	2					S/D								
		45 F	82.50-82.75 Py-epi-chl stringer & diss	2		0	0					F								
	+	65 F	-83.10 Cp-Py-chl film	3		2	2					F/D								
	+			3		0	0					F								
			-84.60 Py-epi film																	
	+			3		0	0													
			-85.50 Py-epi film									F								
	+	50 F	85.90-86.00 Py-Cp-Bn-epi film & diss	3		1	1	F/D	F			F/D								
		45 F		3		2	2	F/D				F/D								
	+	50 VL	86.30-86.50 Py-Cp-epi-chl film & diss	3		0	0	VL				VL								
			-86.90 Cp-Py-qtz v-let & diss					/D				/D								
	+			3		1	1	F												
	+	80 F	88.30-88.60 Cp-Py-chl film	2		0	0	F				F								
90	+	45 F	-89.80 Py-epi film	3		0	1													
	+			2		0	1													
		70 F	91.00-91.10 Cp-Py-epi stringer					S/D				S/D	90.8	10	Tr	Tr	9	36	99	1
	+			2		0	0													
		80 F	-91.90 Cp-Py film					F				F	91.8	10	Tr	Tr	340	27	90	7
	+		92.60-92.80 Cp-Py-chl fil	2		0	0													
								F/D				F/D	92.7	10	Tr	Tr	28	29	74	<1
	+			3		0	1													
				3		1	1	F				F/D	93.2	140	Tr	Tr	531	25	92	4
	+		94.10-94.60 Cp-Py-epi-chl stringer & diss	3		1	2					S/D								
		80 F	-95.05 Py-epi film	3		0	1						95.3	20	Tr	Tr	11	18	75	<1
	+			3		0	1					F/D	95.8	20	Tr	Tr	10	16	74	<1
												F								
	+			3		0	1						97.7	10	Tr	Tr	26	22	76	<1
	+	45 F	97.50-97.80 Py-epi film	3		1	1					F	97.9	40	Tr	2.5	906	16	87	18
		80 F	-98.00 Cp-Py-Mo film & diss					F/D			F/D	F/D								
	+			3		0	1													
		30 S																		
100	+		99.30-99.60 Py-epi-chl stringer & diss	3		1	2					S/D								
	+	85 F 45 F	100.05-100.60 Py-Cp-epi-chl stringer & diss	3		1	2	S/D				S/D	100.1	10	Tr	Tr	40	17	59	<1
		85 VF	-101.40 Py-qtz v-let										100.3	50	Tr	Tr	384	21	81	22
	+			3		0	1													
			102.70-102.90 Py-Cp-epi-chl stringer																	
	+	45 S	-103.60 Cp-Py-chl film	3		1	1	S				S	102.5	30	Tr	Tr	62	21	70	<1
	+	30 F	-104.00 Py-epi film	2		1	1	F				F								
		80 F	-104.60 Cp-Py-chl stringer									F	104.5	20	Tr	Tr	77	18	89	<1
	+	45 F	-105.10 Cp-Py-chl-epi stringer	2		0	0	S				S	104.9	100	Tr	Tr	70	23	66	<1
		45 F	105.70-105.80 Py-epi film					F				F								
	+	50 S	-106.10 Cp-Py stringer & diss	2		1	1						106.6	10	Tr	Tr	48	17	85	<1
		30 S																		
	+		-107.10 Py-epi film	2		1	1	F/S				F/S								
		45 F	-107.60 Cp-Py-chl stringer					/D				/D	107.5	10	Tr	Tr	14	16	92	<1
	+	30 S		2		0	0	S				S								
			-108.50 Cp-Py-chl stringer										108.0	60	Tr	Tr	45	23	95	<1
	+	45 F	-109.00 Cp-Py-chl stringer	2		0	1	F				F								
		20 S						S/F				S/F	108.9	10	Tr	Tr	72	16	116	<1
110	+	70 F	-109.70 Py-Cp-chl-epi stringer & diss	2		0	1	/D				/D								
	+	75 F 60 F	-110.30 Cp-Py film	2		0	0	F				F	110.7	10	Tr	Tr	59	21	80	<1
		30 F	-110.90 Cp-Py-epi film																	
	+	40 F	111.10-111.40 films of Cp,Py & epi	2		0	0	F				F	111.8	20	Tr	Tr	118	19	105	3
	+	50 F	111.90-113.90 films of Cp,Py & epi	2		0	1	F				F	112.7	10	Tr	Tr	71	30	95	<1
	+	45 S	113.90-114.90 Cp-Py-chl stringer & diss	1		0	0						113.8	50	Tr	Tr	65	18	82	2
	+	15 S	114.90-116.50 Cp-Py-chl film & diss	1		2	1	S/F				S/F	114.3	70	Tr	Tr	49	20	90	<1
								/D				/D								
	+			1		2	1	F/D				F/D								
		20 F											116.4	30	Tr	Tr	42	21	127	<1
	+	80 F		2		1	1	F/D				F/D								
								VL				VL	117.9	10	Tr	Tr	764	22	132	35
	+	45 VL	-118.00 Cp-Py-chl-epi v-let & diss	2		1	0	/D				/D								
								F				F								
	+	65 F	-118.80 Cp-Py-chl film	2		1	1													
		85 F						F				F								
120	+	45 F	119.50-119.90 Cp-Py-epi film	3		0	1	F				F								

Depth (m)	Column	Structure	Description	Alteration: Silicification	Argillization	Chloritization	Epidotization	Ore Minerals: Chalcopyrite	Bornite	Chalcocite	Molybdenite	Pyrite	Assay Results: Depth (m)	Core length (cm)	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm
	+	45F	120.30-120.70 Cp-Py-chl-epi diss & film	3		1	1	F/D				F/D	120.3	30	Tr	Tr	206	28	156	1
			121.10-121.50 Cp-Py-epi film & diss																	
	+	45F	122.40-122.50 Cp-Py-epi film & diss	2		1	1	F/D				F/D	121.2	10	Tr	Tr	15	18	130	<1
	+		123.30-123.50 Cp-Py-epi film	2		0	1	F/D				F/D	122.4	10	Tr	Tr	18	17	111	<1
	+	60 F		2		0	1	F				F	124.0	40	Tr	Tr	85	18	95	<1
		45 F	124.00-125.70 Cp-Py film & diss					F/D				F/D								
	+			2		0	1	F				F	125.2	30	Tr	Tr	16	20	148	<1
								F/D				F								
	+			2		0	1	F/D				F/D	126.1	100	Tr	Tr	162	23	87	3
		40 F	126.10-127.10 Py-chl-epi film									F								
	+			2		1	1					F	127.1	100	Tr	Tr	26	17	203	<1
			Porphyry(127.60-137.50)									F								
127.60		45VL	-128.00 Cp-Bn-Cc-Py diss	2		2	2					D/F								
				2		1	0	D	D	D		D	128.1	100	Tr	Tr	185	17	85	<1
	L		128.00-129.00 Py-Cc-Cp-spe-hm siss																	
	L	60 F		2		1	0	D		D		D	129.1	100	Tr	Tr	507	13	81	<1
130			129.00-130.00 Py-Cp-Cc-hm diss	2	1	1	0	D		D		D								
	L	80VL	Pale bluish green porphyry	2	1	0	0	D/		D		D	130.1	100	Tr	Tr	74	21	50	<1
		45VL						VL												
	L		130.00-132.00 Py-Cp-Cc?-spec-hm diss	2	1	0	0	D/		D		D/	131.1	100	Tr	Tr	89	13	57	<1
		45F						VL				VL								
	L		132.00-133.00 Py-Cc?-spec-hm diss	2	0	0	0			D		D	132.1	100	Tr	Tr	23	10	60	<1
	L	60F	133.00-134.00 Py-Cp-Cc?-hm diss	2	1	0	0	D		D		D	133.1	100	Tr	Tr	196	12	86	<1
	L		134.00-135.00 Py-Cp-Cc?-hm diss	2	1	0	0	D		D		D	134.1	100	Tr	Tr	18	15	47	<1
	L	45F		2	1	0	0			D		D	135.1	100	Tr	Tr	14	16	70	<1
		60F	135.00-137.00 Py-Cc?-hm diss																	
	L			1	1	0	0			D		D	136.1	100	Tr	Tr	13	11	36	<1
137.50			137.00-138.00 Py-Cc?-hm diss	1	1	0	0			D		D	137.1	100	Tr	Tr	29	44	75	<1
		85F	Gray compact granodiorite(137.50-151.50)																	
	+	65F	138.00-139.00 Py-Cc?-hm diss	1	0	2	2						138.1	100	Tr	Tr	94	17	81	5
				2	0	3	2	D		D		D								
140	+	45F	139.00-140.00 Py-Cp-Bo diss & film	2	0	1	1	F	F				139.9	10	Tr	Tr	12	18	81	<1
	+	42S	140.00-141.00 Py-Cp film & diss	2		1	1	F				F/D	140.3	10	Tr	Tr	18	15	156	<1
								S/D				S/D								
	+	20S	141.00-142.00 Py-Cp stringer & diss	2		3	2	S/D				S/D	141.6	50	Tr	Tr	133	21	161	<1
		60F											142.5	40	Tr	Tr	173	14	94	<1
	+	85F	142.00-143.00 Py-Cp-Cc?-hm diss	2		3	1	D		D		D	143.0	10	Tr	Tr	62	26	234	<1
		30VF	-143.30 Py-Cp-chl-epi v-let																	
	+	45F	-143.70 films of chl & Py	2		2	1	VL				F	144.0	120	Tr	Tr	128	18	146	<1
		85F	-144.30 Py-Cp-chl film																	
144.60	Δ Δ	45F	144.60-145.20 Brecciated zone & chl ntwk	2		1	1	F				F								
145.20		70F	with diss of Py.Cp.										146.5	10	Tr	Tr	44	16	119	<1
	+			3		3	1	D				D								
		45F	146.00-147.00 Chl film with Cp																	
	+			2		2	1													
		60S	147.40-147.60 Cp-Py-hm stringer										148.0	10	Tr	Tr	123	13	125	<1
	+			1		1	1						148.4	10	Tr	Tr	104	16	69	<1
		90F	148.70-149.50 Py-chl film																	
	+	45F		1		1	1	S				S	148.9	10	Tr	Tr	54	15	126	<1
			149.50-151.50 Cp-hm filn in sil granodiorite																	
150	+	90F		1		1	1	F				F	149.6	10	Tr	Tr	141	14	65	<1
	+																			
151.50		45F	Drilling was finished at 151.50 m in depth.																	

1>2>3

F:filmy,S:stringer,VL:veinlet,
D:dissemination,C:crack