Project San Martin III and IV Regions Chile.



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An area located SE of the old ENAMI Diceocho plant in the Carrizailillo Mining District, called "Project San Martin". This is an area that covers some 11,700 hectares covered by 39 exploration claims (pedimentos) of 300 hectares each, located between the UTM coordinates V1, East 270,000 mts, North 6,779,000 mts, V2, E 279,000 mts, N 6,779,000 mts, V3, E 274,000 mts, N 6,766,000 mts, V4, E 282,000 mts, N 6,766,000 mts. This is an area that runs in an offset fashion 12Km North to South and 13 Km east to West.

I understand that the claims area is being increased to extend to another 17 claims to cover a further 5,100 hectares bringing the size of the project to 16,800 hectares



Just a note to avoid any confusion on the name, "Carrizalillo" which is local to the Project San Martin: There are several places in Chile and in fact within this region as a whole which share the name "Carrizalillo". There is a well known canyon called Quebrada Carrizalillo SE of Copiapo and another well known mining location, Carrizalillo de Las Bombas between Chañaral and Taltal.



Map from the 1:250,000 scale map of Vallenar by the IGM. – The scale has been changed by the scanner to appear here in this report.

Location:



In very general terms, the area of interest is split between Paleozoic metasediments on the west a Cretaceous volcanic sequence and a Cretaceous batholith to the east.

The area is historically well known for gold and copper deposits. Most of these mineralized structures are vein deposits related to vein swarms. The veins are said to be high grade but narrow – frequently about a metre or so across and the individual veins often have a strike length close to 500 meters or there about. In general terms the area is better known for gold rather than copper especially in the zone close to the old ENAMI Diceocho plant.



Yellow = Gold. Brown = Silver, Red = Copper, Grey = Iron, Blue = lead and Zinc. Blue with black spots = Cobalt. Brown with black spots = Mercury. Map by Carlos Ulriksen SERNAGEOMIN, publication: 1990.

The round yellow circles represent gold mining areas. One will notice that the sector directly to the south is better denoted for copper mineralization rather than gold. Then even further south one will encounter a zone of extensive copper deposits and this would correspond to the area around the small town of El Trapiche. This area has had a history of boom and bust in previous times of elevated copper prices. The photo below shows the Posada Patty project near El Tapichie, A number of mining companies inspected this project and abandoned it. Companies such as Noranda, Minera Pudahuel, drilled the project and it then was picked up by Golden Bear Minerals, and an American prospector Dug McDonald. More recently, with copper prices high again, it was picked up by a company called Globle (or something like that), and is being drilled, yet again. One can not see the drilling rigs well in the photo but there are 3 drill rigs working on this project at the present time. In general the mining exploration industry in Chile is having a boom at the present and many projects such as this, which would probably have been considered sub-economic a few years ago, are now being explored. This Posada project is located directly beside the Ruta 5 Pan American highway and is about 15 km due south of the area of interest.





Desvio Norte; a short distance south of Incagausi, is the site of an iron mine. This is an alluvial iron deposit. The mountain of alluvials found here is a result of block faulting. This mountain of sediment is surrounded by volcanics, mostly rhyloites and andesite with strong prophylitic alteration overprint.



Desvio Norte. This was a an iron mine run by CAP now CMP. These piles here seen beside the road are the waste piles of the processed material. Much of the magnetic fraction of the sediment was extracted. These piles have also been worked for alluvial gold but without economic success.

Location:



Geomorphology and Regional Structures:

The area of interest has a central range that trends more or less East-West along Cerro Palo Blanco, while the canyons have a more North-South orientation. Also the major regional faults tend to run north south. Atcama Fault is much more pronounced and well defined to the north and but the time it reaches this far south it has fragmented in many subsections, rather like the shape of a horse's tail, so to speak. The more pronounced N-S set of faults are cross cut by discrete secondary E-W trending faults, more akin in their style to transform faults and that is frequently where one finds zones of Au, Cu, mineralization. As one will note from the different shades and colours on the photo above, there are various zones of hydrothermal alteration. Contrary to what one might expect, most of the known auriferous vein swarms are not actually situated where one finds the most intense hydrothermal alteration.

Satellite Interpretation and Geophysics:

I have seen no analytical satellite image data on this area showing the different zones of sericite, limonite, adularia alteration etc, along with structural interpretation. However this is the first obvious thing to recommend for any future study on the region. Each of these minerals and styles of mineralization give off a specific frequency range that can be measured and thus specific anomalies and target zones of interest would almost certainly be generated by such a study. I would recommend MGS based out of Ireland who are very professional at this sort of work to complete such a study. They do everything from their office in Ireland with ASTER satellite images that they obtain. Added to this there is existing aero magnetic data which has been conducted over this entire sector of Chile. This is a multi client study and is available at a price from several sources such as Geo-Datos (based in Santiago), for example. This sort of data may help to define potential larger targets rather than the smaller vein type deposits.



Regional Geology



Types of deposits one might encounter in the sector of Interest:

The area of interest defined by Glen Schmidt is quite extensive, covering some 17,400 hectares; so one has to be on the look out for different styles of mineralization which are common to the area as a whole. For the purpose of this report I am only considering metalliferous deposits and not industrial minerals.

Epithermal veins:

This is the most obvious sort of target to look for there are numerous auriferous veins in the area, especially in the West side of the area of interest. These are quartz, limonite veins, frequently with some degree of adjacent stockwork and varying degrees of argillic alteration. On the whole these veins occur in swarms and are frequently about 300 meters long and about 1 meter or so wide they tend to pinch and swell and are post genetic in nature to the host rock. All the epithermal style deposits here at this level of the coastal Cordillera all fall into the low suphidation sub-category. These veins are of interest for both copper as well as gold. It should be noted that in this coastal range it is frequent that the copper mineralization is tied up in the limonite and what one may think is a straight common limonite can easily surprise one in this zone can give values in excess of 1% Cu without showing any of the obvious signs of green and blue chrysocolla. The volume for many epithermal deposits is often found not so much in the central vein but an associated stockwork system adjacent to the vein. On the whole from what I have observed, the stockwork systems adjacent to the veins in this area are generally small and although I found some argillic alteration on the contacts to the vein. It looks to me as if both hanging and footwall contacts are generally sharp rather than gradational and as such I doubt one will find much wall rock mineralization. From looking at the waste piles next to the old working, I find a lot of very fine material, suggesting that the rock had been crushed for coarse gold directly at the mine sites and the finer material was then probably sent to the Planta Diceocho for the extraction of the finer gold. I would not be surprised if much of these gold veins contain gold that occurs in a bi-modal frequency for gold size particles. Coarse gold values are nice for a mining operation but can create problems for reserve estimates, while in the project evaluation stage and one may want to pay attention to this factor as the exploration program developed.



Workings such as these are to be found in the area of interest and are highly common. They are workings set over auriferous quartz, limonite veins, some exhibit epithermal textures, such as symmetrical banding, drusy cavities, comb structures, etc.

Shear Zone Mineralization.

Closely related in style to the epithermal vein type of mineralization, the shear zones are occasionally found close to the regional contacts in particular between the intrusive Cretaceous granitoids and the Palaeozoic metamorphics (greenschist). The shear zones often provide an attractive location for the emplacement of Au, Cu, Co deposits which occur in multiple lenses. This is the sort of model found at the Azucar project near Carrizal Alto NW of Vallenar. Locally, one is in similar geology here in this zone of interest at Project San Martin and as such one should be on the look out for such lenses along the regional contacts and especially where the regional contacts change direction.



This photo is taken over the Azucar project near Carrizal Alto and about 90 km north of the zone of interest. But it illustrates the sort of structures to look out for, especially along the regional contacts. I should doubt that one will find a shear zone as obvious as the one in the photo but it could be that there are more discrete shear zones partially covered in colluival and slope debris. Note the different shades to the rocks on the left to those on the right. On the left there is a Palaeozoic sequence of greenschist meta-sediment and on the right one has the Cretaceous granitoid batholith. The mineralization occurs in a series of disconnected lenses within the shear zone along this contact. It is no coincidence that there is a kink or bend, along the contact zone close to the mineralized zone. One should be on the look out for a similar set of circumstances within the zone of interest which is located about 90 km to the south, but may have places were a similar scenario is present. At Azucar, A series of veins can be seen trending in a north east direction; this vein swarm is responsible for the mines at Carrizal Alto, which was the third largest copper mine in the world during its hay day it the late 18 century. This Azucar project was drilled and had good results for Cu, Au, Co but the project development was stopped due to the existence of a new national park designed to protect guanacos. To the best of my knowledge the area of interest for the San Martin project is well outside any National Park.

Iron Oxide Copper Gold. (IOCG).

In reality the term IOCG appears to be a bit of a buzz word meaning different things to different geologists. Projects as diverse as Olympic Dam in Australia to Candelaria and Mantos Verde are denoted as belonging to this category; in reality what they have in common is an assemblage of Iron oxide copper and gold. There are a number of deposits along the strike of the Atacama and Colorado faults which are placed into this style of mineralization. These deposits are mostly for iron with associated Copper and gold mineralization. These deposits are normally far from homogeneous creating great frustration for the engineers and geologists trying to mine them. However they also contain considerable volume of material and if one saw the scale of mining at Candelaria and did not know better, one could be forgiven for thinking that one was looking at a copper porphyry mine. Most of the iron deposits of the area are some what similar but just lack the copper oxide and gold to fall into the IOCG category. The CMP iron mine of El Toffo is found about 25 km south of the area of interest whereas the Algarrobo mine is a similar distance to the north-east and the area of interest lies directly between these mines. I noted on the legal claims map, (dated in July 2007), (catastro), that CMP has claims in the area of interest; these claims would almost certainly be related to iron exploration prospects. I should have thought that CMP would have already looked for iron deposits in this area using the multi client aero magnetic survey. But I think one should pay particular attention to aero magnetic anomalies that may be encountered in the area of interest, especially if they fall in an area not controlled by CMP.



Above: The Candelaria Mine near Copiapo which defied many attempts at classifying to which category of geological models this project should belong to. Now generally accepted as an IOCG deposit.

Iron Deposits.

occurrence on the Chiloe

project.

There are numerous iron projects located in the North of Chile, especially along the southern section of the Atacama fault that splays out into different sections. Really the only mining company dedicated to iron mining in this part of Chile is CMP which is sometimes still called by its old name CAP. This company is listed on the Santiago stock exchange and has a number of producing Iron projects to name a few: Romeral, Colorado, El Toffo, Algarrobo, and more recently Candelaria. At Candelaria, CMP have completed a deal with Phelps Dodge to reprocess the tailing on that project for its iron. Why Phelps Dodge didn't extract the iron themselves when they processed the ore in the first place has a lot of people wondering but in any event it's a massive operation to extract iron from these tailings. Most of these projects are in fact IOCG deposits - Iron Oxide - Copper - Gold. The term IOCG appears to mean different things to different geologists and has become almost a buzz word. These Chilean types of IOCG do not have so much in common with the breccia style of IOCG found in Australia at Olympic Dam, except that they have a similar assemblage of minerals. Locals in Copiapo inform me that CMP are notorious for bad extraction process and still they seam to make a very hansom profit. For instance I am informed that CMP is really only interested in the magnetic fraction of their deposits and do not bother with the non-magnetic fraction which may in fact have more iron product. This is not a subject I have studied but have heard by talking to people in the mining industry. Another such related subject is the Vanadium content of their ores that may warrant investigation. This possible opportunity with Vanadium is something I was told many years ago by a Mining Engineer in La Serena, but I never followed up on this subject. The area of interest defined by Glen, (San Martin Project) is directly within although slightly to the west of this overall trend of iron deposits. I should think that CMP has probably already investigated the most obvious targets in the area but one should still be on the look out in case something has slipped past them.

CMP apart, there are other iron projects in Chile that are not under their control. An Australian company has been investigating an iron project close to Vallenar (Admiral Resources, together with Senor Frakus, I think), I understand that this project has only met with limited success. But with the rising price of iron and the demand from China that project is also being developed. Also Arnando Campos of Vallenar has been working on exploration of an iron project that he believes to be massive due to the size of the aerial magnetic anomaly. There exists a multi-client aero-mag survey that covers much of the coastal ranges of Chile and the pre-cordillera all the way from La Serena to Taltal. Many of these iron deposits such Boqueron Chañar, show up well on this study.

CORFO which is a Chilean government agency for the industrial development of Chile have announced that they will auction Boqueron Chañar iron project. There is nothing much to see on the surface but this project I believe was drilled extensively at one time. CORFO are inviting interested parties to study their data prior to the auction. The notice of which was appearing daily in the Chilean newspapers.



result of block faulting. The sediment is rich in iron potatoes- rounded hematite with some magnetite content. This project was worked by CAP at one time. I do not know who owns it now. This project is located next to the Pan American Highway between La Serena and Vallenar. The local infrastructure has high tension electricity, road, railway and water.

Copper Porphyry.

The area of interest is off the traditional trend for copper porphyry deposits. However recently, since 2005 CODELCO has turned it's attention to looking for copper porphyry deposits in the coastal range only a short distance about 30 km to the north of the zone of interest in the El Morado sector. This is a new development in copper exploration by CODELCO and away from its usual trend. I have not heard of any major discovery by CODELCO in their search for copper porphyry deposits in this area but I have seen the drilling rigs at work in that sector. Also about 45 km north of the area of interest near Cerro Altar, and adjacent to CODELCO'S claims, ENAMI discovered a disseminated copper deposit when they went to drill what they thought was a copper manto. I know about this from looking at the cuttings of the drill program and it is my belief that it was this discovery that led to CODELCO taking an interest in the area. Hence, I would suggest that one pays particular attention to the zoning of alteration in particular from any silica cap one may encounter to zones of; silic – argillic – potassic and prophylitic alteration. Such an overall picture of the alteration zoning is often more apparent to the geologist doing the satellite image research than it is to the geologist actually walking the ground, hence the combination of the MGS ASTER satellite study in conjunction with the Areomag data may help one define local target zones that would be likely candidates for this geological model. As per gold porphyry such as the style found in Refugio, La Coipa (Ag, Au), I doubt one is likely to find an economic gold porphyry in this sector of the Cordillera de la Costa, (coastal cordillera). At any rate to date no gold porphyry that exhibits economic grades has been discovered west of the pre-cordillera. There are a few prospects of this kind in the coastal cordillera, which I have investigated and I have found them all to be sub-economic, even though they frequently show the right sorts of alteration and rock textures, the accompanying disseminated auriferous mineralization appears to be absent.



The above photos are of the mine north of Altar drilled by ENAMI and what was thought to be a manto deposit now looks more likely to be a copper porphyry deposit. As a result of this and also other factors, CODELCO are currently looking for copper porphyry type deposits in this sector of the coastal Cordillera. Indeed it has frequently been the case that hydrothermal vein deposits are found over and in close proximity to copper porphyry deposits. There are a number of such auriferous veins in the area of interest defined by Glen. That is not to say that they necessarily have an underlying copper porphyry but it's an indication that they just might should they have the right accompanying alteration, lithologic, tectonic and structural conditions. This coastal Cordillera has been giving a few surprises such as this to explorers in recent times and one should not discount copper porphyry deposits just because most of them are traditionally found closer to the Andean Cordillera.

Alluvial Gold.

Pointer 27°26'06 11" S 70°22'59 76

There may be a potential for this kind of deposit but I would recommend that the phased exploration program generally to shy away from this type of deposit. With these deposits, frequently being so erratic, it is hard to raise funds for this type of deposit and the market as a whole tends not to reward the discoveries of gold placers. If a zone which is favourable for this type of deposit is encountered it should be recorded and there are a few individual operators in Chile to whom one might be able to rent such a project too but I should not consider this to be a priority.





Above: A photo of a typical placer gold project in the Atacama dessert. Sometimes these deposits respond fairly well to a dry separation process, such as dry blowing but on the whole a wet process would probably be more efficient should the water be available.

Alluvial Iron.

Only about 5 km south of Incaguasi one encounters the alluvial iron deposit of Desvio Norte. This is a result of block faulting where one encounters a hill of sediment surrounded on all sides by volcanic rocks. Located a short distance south and down stream from a major alteration zone and iron bearing sector (Mina Mirrador), there are a number of well rounded iron potatoes in this alluvial. I should have thought that such an occurrence as Desvio Norte would probably be a one off event, a freak of nature where one had all the right structural conditions for the formation of such a deposit. However, considering the close proximity of Desvio Norte to the zone of interest, if one should come across another mountain of sediment, it should come under special scrutiny for iron.



Above left: The photo shows the waste piles of Desvio Norte this is just beyond the eastern boundary of the area of interest defined by Glen. Above right: Desvio Norte from the air.



Copper Manto.

Both syngenetic and post genetic copper mantos are found throughout the coastal cordillera of Chile. Most of these deposits are considered sub economic due to either their size or an excess of calcite. The calcite is a consumer of acid and creates a problem for copper extraction from oxide ores. The majority of these manto type deposits are found as depositions of Chrysocolla – copper silicate, which has precipitated on the facture, joint, or bedding plane, surfaces, from percolating copper rich solutions. From time to time one comes across these types of deposits where the copper rich manto is impregnated by copper mineralization that penetrates the actual matrix rather than just the fractured surfaces. These types of deposits deserve special attention if discovered and they represent a good percentage of copper production from medium sized mining operations. Such Mantos are found in sorts of host rocks ranging from conglomerates, to andesites and rhyolites, also they can carry gold and silver grades in economic values.



Chrysocolla often becomes visible when the rocks are broken open, the mineralization is found within the host rock and sometimes only within the fractured surfaces. The mantos I have seen in the area north of the zone of interest denoted by Glen – Project San Martin, are frequently found in either conglomerates or andesites.



This is an important tip to look out for when looking for copper mantos in this area. They frequently have a white leached zone close to the surface which is completely devoid of mineralization. The copper oxides area normally found a couple of meters below this leached zone.



Some times these copper manto deposits can be very discrete on the surface. This one for example is in a conglomerate; it showed no evident sign of mineralization on surface and no significant alteration. If I had not chipped away with the geopick the chrysocolla and the manto would have remained hidden.

Skarn Deposits.

To the NE of the zone of interest one encounters the southern end of the silver lead zinc belt that runs from Quebrada Las Cañas through the Mina La Jaula, Mina Maria Cristina and up to Chañarcillo and beyond. These deposits more often than not are found on the contacts with the limestones of the Chañarcillo and Nantoco Formations with volcanic sequences which belong to the likes of the Bandurias Formation. Not all skarn deposits are for Ag, Pb, Zn and a number of copper skarns are also found in the area to the north east, in particular where one has a limestone contact to volcanics in a close proximity to an intrusive batholith. This scenario can create the right sort of conditions for a skarn deposit (example Sierra Fritis, and Bonete). However, at the time of writing this and with my current limited knowledge of the area of interest, I do not believe that one has the right ingredients for this type of deposit in this sector.



High grade, zinc lead and silver sulphide ore from the Maria Cristina Mine, 100 km NE of the area of interest. However the area of interest is not on this trend that contains these skarn type deposits.

Disseminated Rutile Deposits.

The development of the titanium dioxide deposits to the west of Vallenar, South of Freirina is something that has started to happen in more recent times. It's not a subject to which I am fully up to speed on. But as I understand it, this was a project that was drilled by Phelps Dodge and sold on for an interest, to a U.K. based company called White Mountain. I am aware that there are other rutile projects in the Freirina area that are rutile in quartz. Joaquin Errazuriz of Minera Hochschild informed me of rutile in that area long before it became a popular topic for exploration in the late 1990's. In any event, the rutile which grades about 2% in that area is found as disseminated crystals in a felsic intrusive of large dimensions. This area for titanium exploration is found about 60 km to the north and while conducting exploration within the zone of interest, one should pay close attention to the regional intrusive batholiths for rutile mineralization in what could very easily be passed over for a sterile granite, granodiorite, diorite or monzanite. Also one should pay attention to Silica Caps if any are observed as these also sometimes contain rutile values; on Cerro Campana near Inca De Oro, for example I discovered Ti values of 1%. This relationship between silica caps and rutile is not something I have read about in any literature but just something I have observed while working as an exploration geologist in the north of Chile.

Cobalt Deposits.

The vein swarms in the coastal cordillera from south of Chañaral to north of La Serena are frequently of interest for Cobalt. Cobalt is a metal which is frequently past over in many of these deposits. Where they mine the copper and gold and leave the more metalurgically complex cobalt behind. The cobalt occurs with the hydrothermal / epithermal vein swarm deposits and also the shear zone lenses which are closely related to the vein swarms. The Azucar area near Carrizal Alto for example is a project which had an exciting potential for cobalt as well as copper and gold. However the new National Park in that area appears to have stopped the development of that particular project. About 45 Km to the north west of the area of interest and south of Freirina at the locality of Cobalitina, there was once a producing cobalt mine that came from a vein swarm that in that area. The point is that the area of interest shows the right sort of address for cobalt prospecting and as such it is worthwhile and recommended to assay for this metal even though it may be an additional exploration cost it may pay off an important dividend in the long run. It should be noted that cobalt often occurs with arsenic and this also provides its own set of metallurgical and environmental aspects, but usually not problems which are insurmountable.



The cobalt grades at this project "Perth- Caliza" can get up to values close to 1%. This project also contains very attractive gold and copper grades. Much of the copper is tied up in the limonite and one maybe surprised to find soluble copper grades of just over 1% from what looks like limonite. This structure also holds gold and although the gold grades are highly erratic and not at all homogeneous throughout the structure as a whole, the average gold grade is close to 3 gr/ton. This particular deposit shown in the photo is related to a lens and shear zone, but these are closely accompanied by an adjacent vein swarm. This area shown in the photo is about 120 km North of the area of interest but the main Cobalt mining sector in the past is located south of Freirina and much closer to the zone of interest. Although there are no current cobalt mining operations going on in Chile (of which I am aware), there is certainly an excellent potential and opportunity for this metal. The zone of interest defined by the project San Martin, is in the right sort of area as per the trend of cobalt mineralization and this should be taken into account while exploring the area.

Breccia Pipes.

Just a short note in this respect, I have encountered numerous breccia pipes in Chile and many which hold important grades for gold, copper and tungsten. Breccia pipes are frequently located in intrusive terrain as a late stage event, in the intrusive batholiths. These breccia pipes often occur in chimney form, composed of quartz and black tourmaline (Schorl) and some breccia pipes exhibit an iron oxide (hematite) hat. Pipes are commonly formed at the intersection of any two tabular features such as faults, fissures, dikes, bedding lava flows or joints. Where tabular features are faults, brecciation is likely to be most extensive if the fractures intersect at small angles. These Pipes appear to occur against igneous contacts where solutions were channelled along irregularities. Mineralization stoping was probably active in the formation of these pipes. This process involves the ascent of ore bearing fluids through the crust of the earth by stoping their way upward. The undermined and partly dissolved blocks break loose from the roof and settle into the solution cavern, forming a pipe of collapsed breccia. The ore and gangue are then deposited in the brecciated mass. So the obvious sign to look for on surface is massive black or very dark green schorl - tourmaline mineralization possibly accompanied by a hematite cap. Although these types of deposits are often sterile for the first few meters many of these breccia pipes are well mineralized only a few meters down and subsequently many breccia pipes have become mines. The area SE of Copiapo in the Cabeza de Vaca is well known for this style of mineralization but there are other zones in the coastal range which also have such pipes, for example the Silvita near Taltal. I am not aware of any such pipes in this area of interest but it's just another point to look out for, should one note dark circular bodies that extrude from the surrounding country rock which contain tourmaline these should be denoted for further investigation.



The Los Azules Breccia pipe South of the Garin Silver Mining District near Quebrada San Miguel is a good example of a breccia pipe. This section here is close to the surface in the oxide zone.



One of the breccia pipes in the Cabeza de Vaca Mining district. Note the black tourmaline.





Stockwork Systems:

Really this should probably appear together with hydrothermal vein and epithermal deposits. One frequently obtains stockwork systems related to such deposits and indeed if the grades carry sufficiently into the stockwork systems then the reserve potential may increase dramatically. On occasion one finds what look like hydrothermal veins that are really just very closely packed veinlets or stockwork with gradational contacts to the host rock. An example of this is the Veta Gruesa in the Garin Mining District. However these types of veins are more frequent in the pre-cordillera than the coastal cordillera and the zone of interest defined by Project San Martin. Such projects as Remolino (Minera Hochschild), and Rosario are well defined stockwork type deposits. These deposits are also found in the coastal Cordillera but some considerable distance to the north. However on the whole these stockwork type deposits in the coastal range often tend to be a close to surface phenomenon, where one has Au, Cu mineralization associated to hematite, limonite stockwork. Should the stockwork system contain quartz i.e. secondary quartz veinlets associated to the hematite and limonite, this is most significant and the associated grades of gold and base metals are much more likely to increase. This is something I have noticed at such projects as Checo de Cobre, Bellavista and the Grain Viejo Silver Mining District.



The stockwork zones can be significant for many different types of metals. Here in this photo one sees the stockwork zone for the Bellavista project, which holds a central vein with good grades of Ag, Pb, Zn and Cu. The stockwork zone has only been mined where there is an association with quartz. This system of veinlets or stockwork are of limonite and pyrolusite, hosted by a conglomerate. The extensive pyrolusite is significant because it can be an alteration product from manganite, which is often found in low temperature hydrothermal veins assocaiated with silver. This missing ingredient to this stockwork found here is barite, apart from the obvious lack of quartz.



These brown patches are part of limonite, hematite stockwork, found in the Garin Silver mining District and the stockwork is associated to a series of silver bearing carbonate veins. In places the stockwork has been mined for silver. There are other zones such as Checo de Cobre where one encounters a similar style of stockwork, but at depth instead of finding Ag, Pb, Zn at Checo de Cobre, one (as the name suggests) finds copper. The point is that one should pay attention to zones of limonite stockwork while conducting exploration in the area of interest – Project San Martin.

Legal situation:

It is beyond the scope of this report to identify the validity of property titles that belong to Glen Schmitz or are controlled by him through third party agreements. The author of this report takes no responsibility for reporting on the legal aspect of this project. It is the responsibility of any third party investor to carry out their own due diligence in this respect.

I would however recommend that a reliable and current legal claims map, (catastro) of the area is obtained from at least two sources, such as; Luis Contreras (Tel: 52-219700) of Copiapo and also SERNAGEOMIN – Servicio Nacional de Geologia Y Mineria. I would strongly recommend going to a well established, law firm that specializes in mining and mineral exploration. Sadly and at costly personal experience, I have found that there are many rouge lawyers in Chile and one can not be too careful in this respect. I would recommend Patricia Núñez of Núñez Muñoz as being highly efficient for this sort of legal advice. (www.nam.cl). Tel: 56 - 2 - 431 - 9040.

Claims:

All UTM coordinates are given using the Provisional South American Datum 1956. This is the standard datum used for the purpose of mining claims in this sector of Chile. It should be noted that the IGM 1:50,000 Scale maps over the San Martin Project are the maps: Carrizalillo (map code D-32) and Incaguasi (map code D-33), and that the new IGM maps use the SIRGAS WGS84 datum. The claim marked in black letters and digits correspond to the juridical jurisdiction of the court house in Freirina. The claims marked in red letters and digits correspond to the juridical jurisdiction of the court house in La Serena. The information given to me regarding the Amelia claims was provided to me through Glen. The San Martin Claims are a series of claims which I recommended to increase the project size potential and are all in the comuna of Freirina except for San Martin 17 which falls within the comuna of La Serena. It is advisable to check the land position with a claims map, (catastro) before proceeding much further with the claims process, than the initial claims presentation at the corresponding court house.

Name	Centre point	Centre point	Side N-S	Side E-W	Hectares
	East (mts)	North (mts)			
Amelia Uno	270,500	6,777,500	3,000	1,000	300
Amelia Dos	271,500	6,777,500	3,000	1,000	300
Amelia Tres	272,500	6,777,500	3,000	1,000	300
Amelia	273,500	6,777,500	3,000	1,000	300
Cuatro					
Amelia	274,500	6,777,500	3,000	1,000	300
Cinco					
Amelia Seis	275,500	6,777,500	3,000	1,000	300
Amelia Siete	276,500	6,777,500	3,000	1,000	300
Amelia Ocho	277,500	6,777,500	3,000	1,000	300
Amelia	278,500	6,777,500	3,000	1,000	300
Nueve					
Amelia Diez	270,500	6,774,500	3,000	1,000	300
Amelia Once	271,500	6,774,500	3,000	1,000	300
Amelia Doce	272,500	6,774,500	3,000	1,000	300

Amelia	273,500	6,774,500	3,000	1,000	300
Trece					
Amelia	274,500	6,774,500	3,000	1,000	300
Catorce					
Amelia	275,500	6,774,500	3,000	1,000	300
Quince					
Amelia 16	276,500	6,774,500	3,000	1,000	300
Amelia 17	277,500	6,774,500	3,000	1,000	300
Amelia 18	278,500	6,774,500	3,000	1,000	300
Amelia 19	279,500	6,774,500	3,000	1,000	300
Amelia 20	280,500	6,774,500	3,000	1,000	300
Amelia 21	272,500	6,771,500	3,000	1,000	300
Amelia 22	273,500	6,771,500	3,000	1,000	300
Amelia 23	274,500	6,771,500	3,000	1,000	300
Amelia 24	275,500	6,771,500	3,000	1,000	300
Amelia 25	276,500	6,771,500	3,000	1,000	300
Amelia 26	277,500	6,771,500	3,000	1,000	300
Amelia 27	278,500	6,771,500	3,000	1,000	300
Amelia 28	279,500	6,771,500	3,000	1,000	300
Amelia 29	280,500	6,771,500	3,000	1,000	300
Amelia 30	281,500	6,771,500	3,000	1,000	300
Amelia 31	282,500	6,771,500	3,000	1,000	300
Amelia 32	274,500	6,768,500	3,000	1,000	300
Amelia 33	275,500	6,768,500	3,000	1,000	300
Amelia 34	276,500	6,768,500	3,000	1,000	300
Amelia 35	277,500	6,768,500	3,000	1,000	300
Amelia 36	278,500	6,768,500	3,000	1,000	300
Amelia 37	279,500	6,768,500	3,000	1,000	300
Amelia 38	280,500	6,768,500	3,000	1,000	300
Amelia 39.	281,500	6,768,500	3,000	1,000	300
San Martin 1	281,500	6,774,500	3,000	1,000	300
San Martin 2	282,500	6,774,500	3,000	1,000	300
San Martin 3	283,500	6,774,500	3,000	1,000	300
San Martin 4	284,500	6,774,500	3,000	1,000	300
San Martin 5	285,500	6,774,500	3,000	1,000	300
San Martin 6	286,500	6,774,500	3,000	1,000	300
San Martin 7	287,500	6,774,500	3,000	1,000	300
San Martin 8	288,500	6,774,500	3,000	1,000	300
San Martin 9	289,500	6,774,500	3,000	1,000	300
San Martin 10	283,500	6,//1,500	3,000	1,000	300
San Martin 11	284,500	6,771,500	3,000	1,000	300
San Martin 12	285,500	6,771,500	3,000	1,000	300
San Martin 13	286,500	6,771,500	3,000	1,000	300
San Martin 14	287,500	6,771,500	3,000	1,000	300

San 15	Martin	288,500	6,771,500	3,000	1,000	300
San 16	Martin	289,500	6,771,500	3,000	1,000	300
San 17	Martin	282,500	6,768,500	3,000	1,000	300



The diagram above demonstrates the shape of the claim blocks related to the Amelia claims at the San Martin Project. Amelia Uno is on the top left hand side and Amelia 39 is in the lower right hand corner.

Access, Logistics and Infrastructure:

The access into the area is good on the whole. But the area is so large that different zones should be accessed from different directions. Many of the smaller dirt roads in the zone were badly affected by a massive rain storm in 1997 and another in 1999. I would strongly recommend a four wheel drive vehicle with a good road clearance for doing exploration in this area.

As far as logistics and infrastructure in concerned, the villages of Incahuasi, (also spelt Incaguasi), Carrizalillo, Trapiche, Domeyko and Choros offer very little in the way of facilities. In Domeyko there is a privately owned plant that accepts copper and gold ores. Also ENAMI have a plant in Vallenar but it is so stretched to capacity that it's become almost a joke for getting ones ores treated. If one can produce a concentrate rather than just deliver ore it is much easier to develop the mine concerned. There are labs and many mining service companies based in both La Serena and also Copiapo. The area of interest is closer to La Serena than it is Copiapo. One good point is that the people living in the area as a whole have what one might call a "Mining Mentality". This is extremely important as the people understand mining and generally this helps enormously when looking at modern day environmental concerns and getting the right permits to develop a mine. This sector of Chile has a history of mining and thus trying to get a project up and running in a place like this is much easier than it would be in more environmentally sensitive areas.

A phased exploration program for Project Development:

This is all a matter of priorities coupled with resources to which one has to hand. So therefore this exploration program suggested takes for granted that one has the financial resources.

Therefore I would recommend that the first matter is to obtain an informed legal opinion as to the status of the claims in the area of interest and what is the best strategy to continue. I would have placed this as one of the most important and over riding priorities of all factors related to this project.

If the above shows positive results as I believe it probably would and enough ground remains open to warrant and extended exploration program I would recommend the following:

- 1) Research: I would suggest researching as much as one can on the existing data on the geology and mineralization of the area of interest. Much of this data is available in SERNAGEOMIN and SONAMI in Santiago.
- 2) Purchase of Geological maps and relevant publications over the ground of interest. This is really just an extension of the research denoted above.
- 3) First general recognisance of the area for rock sampling, notes of location of mineralized structure, lithologies etc. Geologist plus helper 14 days in the field.
- 4) Create a data base. It would be helpful if one had a detailed topographic map of the area. There are a number of ways to obtain such maps either through private surveying companies such as Eagle Mapping or through the SAF, (Chilean Air Force). This map should be in an AutoCAD digital format. One can add extensive data to this base map as the exploration program develops.
- 5) I would suggest obtaining the aeromagnetic data from Geo-datos that covers the area of interest.

- 6) I would recommend a second general recognisance of the area as a whole, taking samples for both assay and also for thin section work.
- 7) Once one has this initial information, I would suggest sending a copy the data to MGS in Ireland, where together with satellite ASTER image data they can make an evaluation of the area which would be an enormous help for the next phase of exploration.
- 8) The next step is a detailed sampling and mapping of the area of interest with special attention made to the target zones generated by the ASTER image data. Once one is familiar with the regional geography of the area I would suggest a flyover of the area of interest where one may identify more areas which deserve special attention. Apart from sampling the obvious structures outlined by the existing workings. I would recommend soil sampling along ridges, rather than creeks. I have used this method before on an area to the north of the zone of interest with successful results.
- 9) Once one has completed this phase of data collection one should have a better understanding of the area and the project as a whole in order to set up what the main priorities are. I would recommend placing the collected data onto a computer program such as Surpac, Datamine, Vulcan or the likes. One may find for example that ones priorities are the numerous auriferous veins located in the western sector of the area of interest or other targets generated by the exploration program. At this stage one would probably take the decision to design a first phase drilling program over targets of interest and making the required environmental impact declaration.

Notes: I would recommend that one sets up a decent base camp in the area of interest. The companies that are frequently most successful in finding the deposits are those that stay close to the rocks they are exploring and not their offices in the city. In an ideal world I would have suggested contracting all the drilling to professional drilling companies. However, the situation in Chile today as per obtaining a drill rig is becoming extremely desperate and rig availability is getting worse all the time. Currently one has to wait for at least 4 or 5 months for a drill rig. These are extraordinary times in the exploration industry call for extraordinary measures to ensure success. I would therefore suggest taking the unusual step of obtaining a small portable rig for exploration on the program in order to help identify the main targets and at least start trying to prove something up. If one is dependent on contactors to complete all the drilling, one would be at their mercy and the market demands results within a reasonable timeframe and does not except excuses of any kind. Another point to keep in mind is a source of water for processing any potential discovery. Should one obtain encouraging results during the exploration phase one should bear in mind the matter of water and "Water Rights". I would recommend not to leave this subject to the last moment in the project development should a major resource be discovered.

Conclusions:

I conclude that the area of interest denoted by Glen for this exploration program is indeed interesting geologically with extensive potential targets in an area which is probably under explored with modern exploration techniques. Should the legal study of the titles over the area prove to be encouraging with sufficient ground available for exploration not covered by pre-existing claims, this could indeed be a very exciting exploration project which deserves and warrants a phased exploration program. The Author of this report, Henry Edward Cecil Floyd; is an independent practising geologist, with over 20 years of experience working in the mineral exploration industry in Australia and Chile. Is a British citizen resident in Chile, graduated from the New Mexico Institute of Mining and Technology, U.S.A. with a BSc in 1986 and has no personal financial interest in this project – "Project San Martin".

Harry Hazel

Appendix of Project Photos:





















The old Diceocho ENAMI plant East of the town Carrizalillo in the Carrizalillo Mining District. An area known more for gold rather than copper. Location: UTM: East 281453 mts, North 6775633 mts, Alt: 411 mts. I had thought the tailings here were larger than they were. Size estimate: 200 x 300 x 3 mts.







Sample ID Project: Drill Hole: Footage: To: Date: 17.6-2007 Logged by: H Flind



























The Old ENAMI Diceocho Plant Tailings Pile at the Carrizalillo Mining District. III Region, Chile.





The map above has been scanned from the IGM map of Incahuasi. The original scale was 1:50,000. The IGM Map code is D-33. Note this is one of the new generation maps which use a different Datum. These maps use the SIRGAS (WGS84) Datum. However the mining code claims still use the old South American Provisional Datum 1956. This can lead to some confusion.



The tailings pile as seen from space on Google Earth. Just playing around with the measuring tool I measure the tailings to be about 200 mts long and 100 mts high. The tailings are several meters deep in the middle and only around 2 mts deep on the sides.

I was informed by Elias Rojas that a report exists that shows the tailings have 200,000 tons @ 3 grams per ton gold. However, I have seen no such report and I don't believe Elias is an authority on this subject. I would say the figure is probably closer to 120,000 tons. I get this figure by 200 mts (length) x 100 mts (width) x 3 mts (height) x 2 (SG).

I only took 2 samples from the entire tailings pile both of which were taken in the central east sector of the tailings.

Sample # 521922 was taken 30 cm down into the tailings pile at the UTM location: E 281344 mts, N 6775705 mts. Alt: 395 mts. The samples were sent to ACME Labs in Santiago. I asked for Au, Ag, Cu (total) and Cu (Sol) by AA. I also requested 30 EL ICP at the time of writing I am still waiting for the ICP results. Au = 1.996 ppm, Ag = 1 ppm, Cu (Total) = 0.156% Cu (Soluble) = 0.043%

Sample # 521923 was taken 1.30 mts down into an old pit which had been dug into the tailings pile, at Location: E 281343 mts, N 6775682 mts. Au = 1.587 ppm, Ag = < 1 ppm, Cu (Total) = 0.095%, Cu (Soluble) = 0.015%.

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Sec.		ld.Muestra	Т.	Au	Ag	CuT	CuS
				ppm	Ppm	%	%
	1	PREP BLANK	М	<0.005	< 1	< 0.001	< 0.001
	2	521922	М	1,996	1	0,156	0,043
	3	521923	М	1,673	< 1	0,097	0,014
		521923	R1	1,587	< 1	0,096	0,015
		STD84	S	0,565			
		STD69	S		74		
		STD24	S			0,450	0,072
		BK	В	<0.005	< 1	< 0.001	< 0.001



















The status of these claims should be investigated at the Court House in and Conservador Freirina should one wish to continue with interest in these tailings as part of the project.