1 - INTRODUCTION

1.1 – OBJECTIVE

The follow present report has an objective to describe the accomplished works in offices and fields for the geologic and economic description of the area referring to the Ouro Branco Project of the Cone Mine Exploration. This work has a main goal elaborate an evaluation of the iron ore reserves in the area of the process, quantifying and qualifying them with accuracy.

1.2 – MINERAL LEGISLATION IN BRAZIL

The laws that conduct the mining activities in Brazil established that the subsoil belongs to the federal government. That way, activities of prospection, exploration and exploitation just are possible with the government authorization through of its department DNPM (National Department of Mineral Production).

Each process of mineral exploration is evaluated by the DNPM based in technique criteria and the authorizations are granted in two stages: Exploration License and The Mine Work Concession. The authorization holder of DNPM has full and exclusive rights about the work execution, as well about the commercialization of the area.

1.3 – MINING IN BRAZIL

Brazil stands out worldwide as one of the main producers of the minerals goods.

The mining industry in Brazil has a highest technology level and technique, being forward of a several obtained innovations in this area in the last decades.

In all regions of the country exists an extensive web of education for the formation of professional that attempt to the mining's demand. The high workforce qualification, together to good infra-structure and low productive cost becomes the mining in Brazil object of a great interest by the part of the foreign and national investors.

Brazil is the second bigger producer of the iron ore (approximately 20% of worldwide production) and the third bigger producer of bauxite (approximately 13% of the worldwide production). Data of the IBRAM (Brazilian Institute of Mining) presented that in 2008 the Brazilian mineral sector employed 161 thousand people in the mine work activity and the value of the commercialized national production was US$ 29 billion.

Adding the commercialized rude ore production to the production of the sector of mineral transformation, the mining of Brazil generated in 2008 US$ 42 billion, what represents 5.7% of the GIP. The positive scene reflects in the investments of the sector that are foreseen in US$ 47 billion between 2009 and 2013.

1.4 –IRON ORE IN THE IRON QUADRANGLE

The worldwide iron ore reserves (measure + indicated) are in the order of 310 billion of tons. Brazil has 6,7% of this reserves (21,0 billion tons) and it is in a 5^{th} place between the countries which have the biggest volumes of the ore. However the high grade of iron in its ore (60,0 to 67,0% in hematite and 50,0 to 60,0% in the itabiritos) takes Brazil to occupy the place of prominence in the worldwide scene, in terms of iron contained in the ore. 70% of the Brazilian reserves can find in the state of Minas Gerais (198 million tons), being the big part of these are in the iron quadrangle, traditional region in the extraction of this mineral goods. The region of the Iron quadrangle, had importants itabirítico and hematítico iron ore deposits of high grade (Fe > 60%).

CONE
MINE EXPLORATION

Figure 1 - Iron Ore from the Iron quadrangle

Cone Mine Exploration - www.cme7.com.br
Av: Luiz Paulo Franco, 345 - 1º Andar / Cep.: 30320-570
Tel.: +55 (31) 3282-3232 - Fax.: +55 (31) 3286-5111
Belo Horizonte - MG - Brasil

1.4.1 – Stratigraphy

<table>
<tr><td></td><td colspan="3">RECENT SEDIMENTARY COVERAGE</td></tr>
<tr><td rowspan="12">PROTEROZOIC</td><td>ESPINHAÇO SUPERGROUP</td><td>Conselheiro Mata Group</td><td>Cambotas Formation</td></tr>
<tr><td colspan="3">Itacolomi Group</td></tr>
<tr><td rowspan="10">MINAS SUPERGROUP</td><td rowspan="5">Piracicaba Group</td><td>Sabará Formation</td></tr>
<tr><td>Barreiro Formation</td></tr>
<tr><td>Taboões Formation</td></tr>
<tr><td>Fecho do Funil Formation</td></tr>
<tr><td>Cercadinho Formation</td></tr>
<tr><td rowspan="2">Itabira Group</td><td>Gandarela Formation</td></tr>
<tr><td>Cauê Formation</td></tr>
<tr><td rowspan="2">Caraça Group</td><td>Batatal Formation</td></tr>
<tr><td>Moeda Formation</td></tr>
<tr><td colspan="2">Tamanduá Group</td></tr>
<tr><td rowspan="5">ARCHAEAN</td><td rowspan="4">RIO DAS VELHAS SUPERGROUP</td><td rowspan="2">Maquiné Group</td><td>Casa Forte Formation</td></tr>
<tr><td>Palmital Formation</td></tr>
<tr><td>Nova Lima Group</td><td>Schist meta-sedimentary and metavolcanic</td></tr>
<tr><td>Quebra-Osso Group</td><td>Metavolcanic mafic-ultramafic Association</td></tr>
<tr><td colspan="3">GRANITE-GNEISSIC-ARCHAEAN TERRAIN</td></tr>
</table>

Table 1 - Simplified Stratigraphic Column of the Iron Quadrangle - CPRM

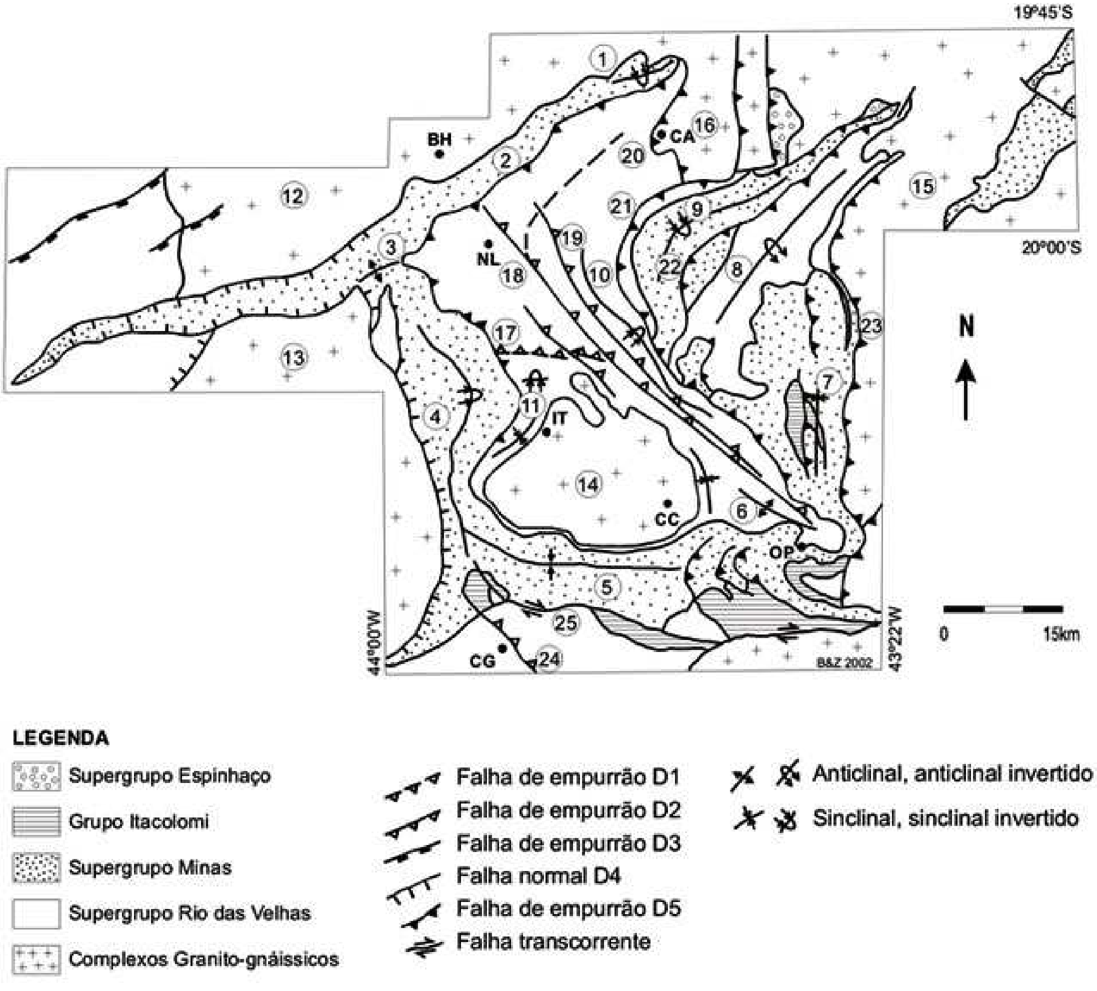

Figure 2 - Structural Map of the Iron Quadrangle - CPRM

Subtitles: Fold: 1 - Syncline Piedade, 2 - Homocline Serra do Curral, 3 - Anticline Serra do Curral, 4 - Moeda Sincline, 5 - Dom Bosco Sincline, 6 - Mariana Anticline, 7 - Syncline Santa Rita, 8 - Anticline Conceição, 9 - Syncline Gandarela, 10 - Syncline Vargem do Lima, 11 – Andaimes Syncline. Granite-gneiss Complex: 12 - Belo Horizonte, 13 - Bonfim, 14 - Bação, 15 - Santa Bárbara, 16 - Caeté. Falhas: 17-Bem-Te-Vi, 18 - São Vicente, 19 - Raposos, 20 - Caeté, 21 - Cambotas, 22 - Fundão, 23 - Água Quente, 24 - Congonhas, 25 - Engenho. Cidades: BH - Belo Horizonte, CC - Cachoeira do Campo, IT - Itabirito, NL - Nova Lima, CA - Caeté, CG - Congonhas, OP - Ouro Preto.

1.4.2 – Basic Geology of the Iron Quadrangle

The crystalline basement of the Iron Quadrangle is compound by the gneissic metamorphic complex denominated of Bonfim Complex and Moeda Complex (west side of the Serra da Moeda), Congonhas Complex (to southwest of Iron Quadrangle); Santa Rita Complex (to southwest of the Ouro Branco Mountain Range); Caeté Complex (to east of the Caeté City); Belo Horizonte Complex (to the north of the Serra do Curral); Santa Bárbara Complex (to the east of the Caraça Mountain Range) and Bação Complex (which it is in the center of the Iron Quadrangle).

Geocronological Analyses in rocks' samples by some of these complexes, revealed ages of 2,9-3,2 Ga. And also, two generations of plutons for the Neoarchaean: 2,78-2,77 Ga. (calcium alkaline plutons) and 2,73-2,62 Ga. (granites anorogenic).

Rio das Velhas Supergroup

The ages between 2,776 Ga. and 2,857 Ga. allows say that the Rio das Velhas Supergroup along with the plutonic rocks represents a typical terrain granite-greenstone of the Archaean.

The metavolcanic and metasedimentary rocks form the Rio das Velhas Supergroup, subdividing in two groups (Nova Lima (base) and Maquiné (top)). The Maquiné Group divides in two formations:

- Palmital Formation (base); compound by quartz sericite, quartz phyllite and phyllite.
- Casa Forte Formation; compound by quartz sericite, chloritic, schists and phyllite.

The Nova Lima Group represents a sequence of a “greenstone belt” type subdividing in three units, from the bottom to the top:

- Metavolcanic Unit; compound by serpentine, steatite, Talc-schists, amphibolites metamorphosed, metabasalt and metatuffs, besides of komatiites with spinifex structure.
- Chemistry Metasedimentary Unity, represented by carbonetic schists, metacherts, banded iron formation and phyllites:
- Clastic Metasedimentary Unity, represented by quartz-schists, quartz phyllites, impure quartzite and meta-conglomerates.

Minas Supergroup

The Minas Supergroup is subdividing from the base to the top in the Tamanduá, Caraça, Itabira and Piracicaba Group.

The Tamanduá Group is represented by a set of by a set of quartzite, phyllite, quartz and clay shists, itabirites phyllite and dolomite, conglomerates and coarse quartzite.

The Group Caraça is compound by the Caraça quartzite (Moeda Formation) and Batatal schists (Batatal Formation)

- Moeda Formation represented by conglomerates and coarse quartzite of fluvial origin and fine quartzite and phyllites by transitional-marine origin.
- Batatal Formation; constituted by phyllites sericites, graphitic and locally this formation can presents chloritic and carbonate sediments, being that in the superior part can be seen fine layers of chert and hematite.

The Itabira Group divides in two formations, from the base to the top:

- Cauê Formation; predominatly represented by a iron formation of lake superior kind and subordinate by dolomiticos and amphibolitics itabiritos with small phyllites lenses and marl and some manganiferous horizons.

- Gandarela Formation; compound by layers of carbonate rocks represented by dolomite and subordinate by itabiritos, dolomitic phyllites and phyllites.

The Piracicaba Group divides in five formations, from the base to the top:

- Cercadinho Formation; represented by ferruginous quartzite, ferruginous phyllite, phyllite, quartzite and small interpolated of dolomite;

- Fecho do Funil Formation: represented by dolomitic phyllite, phyllite and impure dolomite;

- Taboões Formation: represented by fine and massive quartzite;

- Barreiro Formation: represented by phyllite and graphitic phyllite;

-Sabará Formation: represented by phyllite, chlorite-schist, greywacke and locally tuffs and cherts.

Itacolomi Group

The Itacolomi Group is represented by quartzite, conglomeratic quartzite and lenses of conglomerate with pebbles of itabirito, phyllite, quartzite and vein quartzite, deposited in coastal and deltaic environment.

1.4.3 – Itabiritos of the Iron Quadrangle

The Itabiritos are compound by iron rich bands (mainly hematite and magnetite) interpolated with quartz and/or dolomite rich bands (BIF- banded iron formations). The high grade iron ore are mainly compound by hematite, being used directly in blast furnace, as granulated ore.

The area of the process is in the Guanhães County. The region has a similar geologic context to the "Classic Quadrangle" and a huge potential for iron ore, so that is informally considered as part of the Iron Quadrangle. Several explorations in the area indicate presence of hematites with grade over 68% of Fe and extensive reserves of Itabiritos with grade from 50% of Fe.

1.4.4 – Nearest Mining

The region comprises the cities of Guanhães, Conceição do Mato Dentro and Serro, is distinguished as new big scenery of the iron's mining in the state of Minas Gerais.

In this area, exist a strategic reserves of Vale and the region had an investment of US$3,6 billion by Anglo Ferrous (part of the Anglo American PLC).

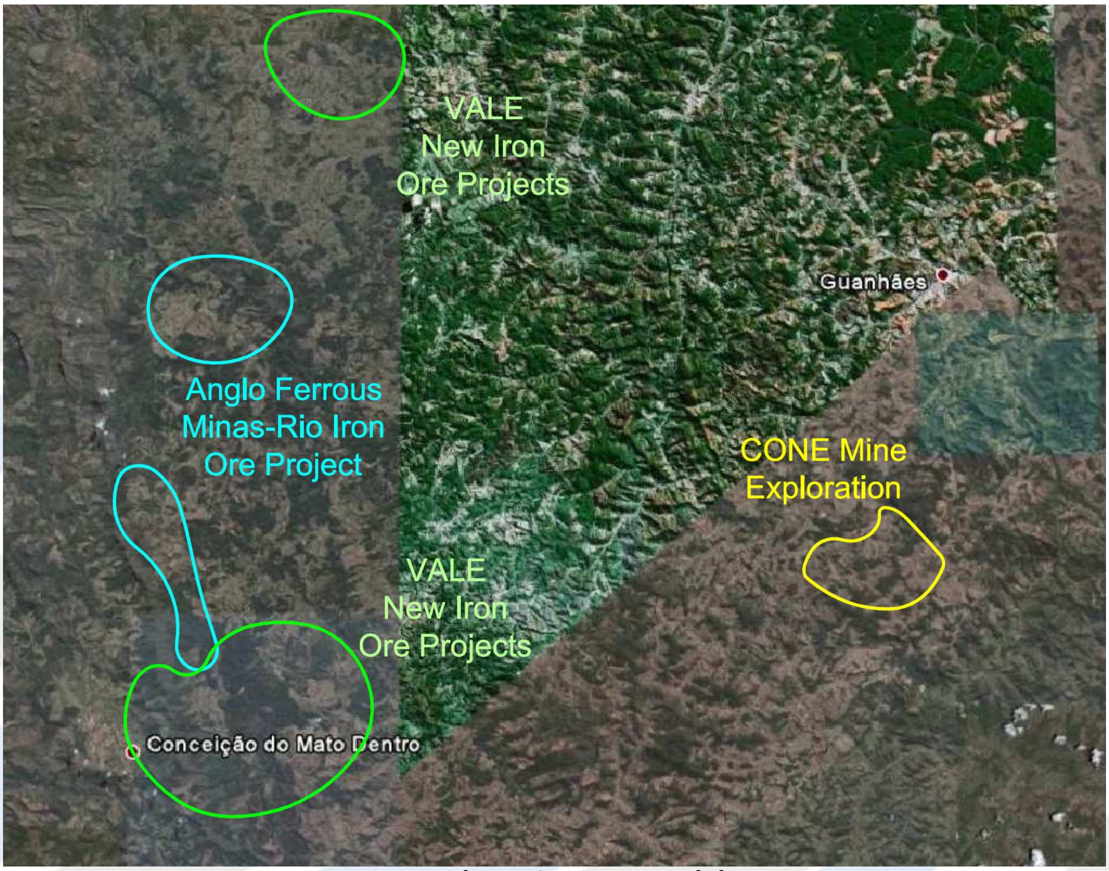

Figure 3 - Nearest Mining

1.5 – ALLOCATION

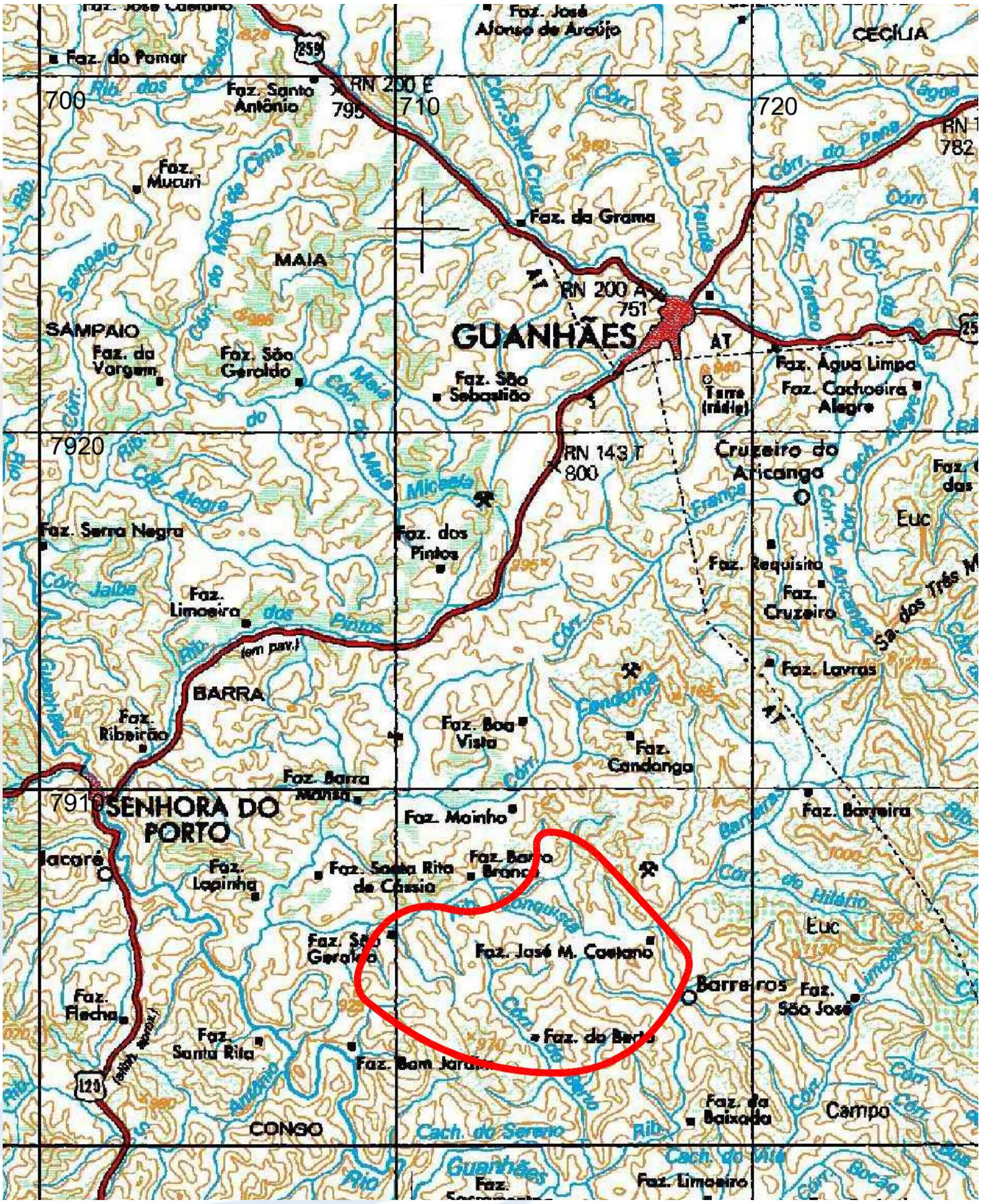

Figure 4 - Allocation

Figure 5 - Allocation

1.6 – GEOLOGY

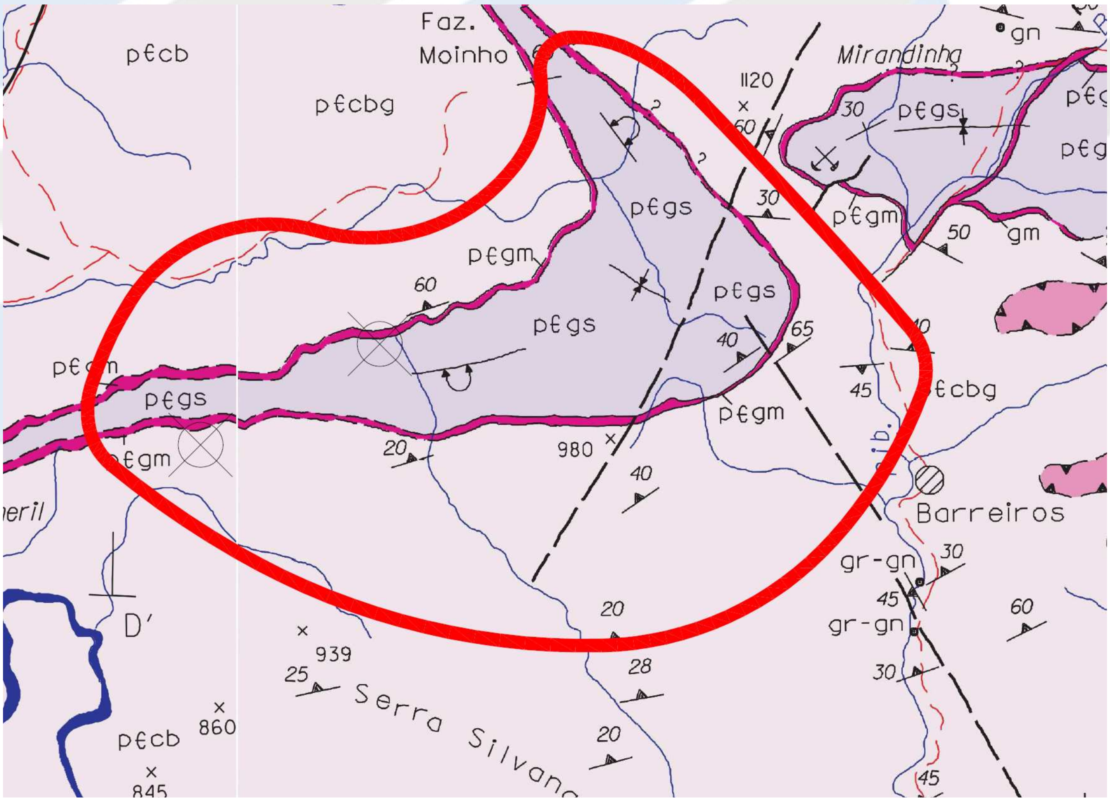

Figure 6 - Basic Geology of the place.

1.7 – THE GUANHÃES COUNTY

1.7.1. Characterization

Allocation: RIO DOCE

Area: 1076,82 Km2

Altitude:

Maximum:	1215 m
Place:	Pedra de Sao Geraldo
Minimum:	400 m
Place:	Prox. Cachoeira Escura

Central point of the city: 764,83 m

Temperature:

Average annual:	24,5 C
Maximum average annual:	29,6 C
Minimum average annual:	18,2 C

Average Annual Rainfall: 1113,8 mm

Relief:

Topography	%
Flat:	15
Wavy:	55
Mountainous:	30

Main Rivers:

RIO GUANHAES
RIBEIRAO GRAIPU

Bay: RIO DOCE BAY

Sources: Institute of Applied Geosciences - IGA
Brazilian Institute of Geography and Statistics - IBGE

Boundaries Counties:

SAO JOAO EVANGELISTA
SABINOPOLIS

SENHORA DO PORTO
DORES DE GUANHAES
BRAUNAS
ACUCENA
VIRGINOPOLIS
PECANHA
GONZAGA

1.7.2. Population

Population Resident

1970,1980,1991,2000,2005

YEARS	URBAN	RURAL	TOTAL
1970	10.329	12.097	22.426
1980	13.742	9.039	22.781
1991	17.130	8.043	25.173
2000	21.108	6.863	27.971
2005(1)			29.491

Source: Brazilian Institute of Geography and Statistics - (IBGE)
(1) Preliminary Data

2 – LOGISTIC AND ACCESSIBILITY

2.1 – HOW TO ARRIVE

Leaving from Belo Horizonte, take MG-10 towards to Conceição do Mato Dentro and, in the junction of the MG-10 with MG-229, converge to the right in the MG-229 towards to Senhora do Porto County, going through Dom Joaquim. In the Senhora do Porto County, take the dirt road which takes to the São Geraldo Farm, area of this process.

2.2– MAIN HIGHWAYS OF ACCESS

Approximate Distances to the main centers (Km):

Belo Horizonte: 244
Rio de Janeiro: 670
São Paulo: 815
Brasília: 945
Vitória: 570

Main Highways that connects to Belo Horizonte:

BR-381, MG-434, MG-129, BR-120, MG-010

Main Highways that connects to the County:

BR-120, BR-259, MG-229, MG-232

2.3 - AIRPORT

The main airport next to the area of the process is the Guanhães Airport, located approximately around 51 km of the area by the BR-120. The Tancredo Neves International Airport, located in the Confins County – MG, metropolitan region of Belo Horizonte, is in a trajectory of approximately 180 km up to the area.

Figure 7 - Partial View of the Tancredo Neves International Airport

2.4 – RAILROADS

The most near railways is the EFVM (Railway Vitória-Minas), under the responsibility of the Vale do Rio Doce (VALE) that connect up to Tubarão port in Vitória – ES.

2.5 – PIPELINES

There is a prevision of the entrance in operating, in 2012 of pipeline by the company Anglo Ferrous (Minas-Rio System), of 525 Km, that will cover 32 counties in the state of Minas Gerais and Rio de Janeiro up to the Port of Açu, in São João da Barra – RJ.

A good leaking alternative of production by the Guanhães Project is the own pipeline with about 500 km up to Rio de Janeiro Port. The esteem investment in the pipeline construction is of US$1,300,000.00 per Km; in a total of **US$ 650,000,000.00**

The own pipeline's implantation makes possible the ore transport at a cost of 30 times lesser than using the third railway network.

2.6 – PORTS

2.6.1 – Port of Açu – RJ

Located in the São João da Barra County, in the north region of the state of Rio de Janeiro, the Complex of Super Port of Açu is one of the big investment of Brazil in private maritime terminals. Next to the oil fields offshore of the Campos, Santos and Espírito Santo Basins and with easy access to the most developed region of Brazil, the Port of Açu will serve of logistic center for the regions Center-West and Southeast of Brazil

This port terminal will have six cradles of mooring for bulkers ships and four cradles of mooring for general loads, and support's vessel to the offshore activities. With a depth of 18,50 meters, the Port of Açu will allow the Capesize ships' mooring with capacity up to the 220.000 tons, as well the new generation of the superconteineiros ships with capacity up to 11,000 TEUs (standard container of 20 feet (6,0m) by length).

Its projects also comprises centers of distributions and consolidation of loads, installations for support's vessel to the offshore activities, assemblers automobile and clusters for processing of the ornamental rocks.

The Port of Açu should start to operate in the first semester of 2012, offering 10 cradles with depth of 18,5 m in a total area of 7.800 hectares, that will shelter an iron ore terminal and pelletizing plants, a siderurgy complex, thermoelectric mill, cement plants, a metal-mechanic pole, petrochemical units, assemblers automobile, area of storage inclusive for a natural gas, cluster for processing of the ornamental rocks, installations for support's vessel to the offshore activity.

2.6.2 LLX – Southeast Port– RJ

The Southeast Port is a privative terminal of mixing use located in the Itaguaí County, Sepetiba Bay, Rio de Janeiro, next to the public port of Itaguaí.

With a depth of 20 meters, the Southeast Port will be able to receive ships capesize, and will be used for shipment of iron ore.

With an internal area of 52,1 hectares, the Southeast Port will shelter court to stockage and handling of iron ore with storage capacity of 25 million of tons per year (mtpa), in a first phase, may expanding its capacity to 50 million (mtpa) in a 2nd phase. The LLX have already got the previous environmental license for 2 cradles with total of 50 millions tons per year.

Figure 8 - Artistic Conception of the port in operation.

With a privileged allocation, the Southeast Port will going to benefit of the infra-structure of terrestrial and maritime access already existent. Its integration with railroad MRS (MRS Logistic S.A) will allow that the Southeast Port attend some of the main miners regions located in Minas Gerais. Besides that its connection with the future Anel Rodoviário of Rio de Janeiro will allow an easy access to the metropolitans region of Rio de Janeiro and São Paulo.

The Southeast Port will start the operations around the second semester of 2011, with the goal to accomplish the iron ore loading proceeding from the State of Minas Gerais of the MMX Southeast mines and of the other independent miners, than exploring its contiguous privileged condition to the Sepetiba Port. In the first phase, the project will have 1 cradle of mooring, which may, in the second phase, reach 2 cradles of mooring with capacity of 50 million tons per year.

Link: http://www.llx.com.br

3 – COSTS

3.1 EXPLORATION

To defining the economic possibilities of the area to explore, will be accomplished the necessary works of prospection that will consist, in the beginning of the following listed steps. However, having the currently existing data, these can not be considered as definitive.

3.1.1 Base-Map Elaboration

The cartographic base to the programming, register and analysis of the exploratory work will be obtained by the restitution of the air photograph, available at 1:40.000 and 1:20.000 in recent images.

The plan will have scale 1:10.000, adjusted with field topographical control and spaced level curves in 5 m

3.1.2. Opening and Conservation of Roads

The field exploration implantation should be preceded of recovery works and improvements in the stream bed of the secondary roads that cut the area, opening of new routes, in order to facilitate the access to the distant places.

3.1.3. Geologic Mapping 1: 10.000

It is essential the execution of the basic geological mapping, aiming at to the identification and cartography of the levels potentially mineralized, as noted above. So, the whole lithological suite in the area should be identified petrographically, with delimitation as accurate as possible from the contacts of the marked units.

The accurate definition of contacts, and petrographic characterization of the emerging lithology, may eventually require the opening of the trenches, in order to expose the rocky substratum to the geologist observation.

The resulting geological map, as mentioned previously, should be presented at scale 1:10.000. To it will be integrated obtained information posteriorly, during the exploration with the execution of trenches, boring and galleries.

3.1.4. Geophysical Prospection

Intend to accomplished a geophysical prospection in the area, conciliating two geophysical methods, as seismic and resistivity, aiming at to detect possible anomalies that become into target for the investigation work in subsurface, posteriorly.

3.1.5. Digging

It will be executed exploration's digging, aiming at to obtaining information of sub-surface and to propitiate the exposition of the mineralized bodies for the description of the points and posterior sample collection.

Opted by the execution of the trenches (or "pipe") and galleries to the characteristics' determination of the mineralized bodies, once that these ones present partially emerging and in an area of difficult access and mechanical equipment.

The trenches will be directed perpendicularly to the layers' direction. The digging will be made with manual tools, as pickaxes and shovel. To the execution of the service will be contracted the local workforce.

The works will be following by the responsable technician.

3.1.6. Boring

From the analysis of the obtained data in the geologic mapping, will be leased some orificies of borehole, comprehended in three stages. In the end of each boring stage, an evaluation will be made, aiming at to the taking a decision as for the continuity of the exploration.

It is expected, in the three stages a boring with continuous coring. The works will be contracted with specialized companies.

The description of the testimony will include the petrographic aspects, stratigraphic and structural. The intervals will have maximum length of 1,5m, eventually extended to 2,0 m in the portions confessedly sterile.

3.1.7. Chemical Analysis

The chemical analysis will be executed in a specialized laboratory and will include the grades of Fe, FeO, Mn, SiO_2, Al_2O_3, CaO, MgO, TiO_2, S, P and others elements traces.

3.1.8. Technological Assays

It will be sending samples of ore for the execution of the technological assays in specialized laboratory that include granulometry analyses and the following tests:

- Tumbling Iso
- Crepitation Coisrmj
- RDI Coisrmj
- Reduction JIS M 8713
- Midrex Linder Test
- Sulphur Release

These tests propitiated the verification of the material adequacy to the use in siderurgy, consisting of an evaluation for use in blast-furnace and for use in process of direct reduction.

3.1.9. Final Report

Completed the exploration, the final report will be in charge of the petitioner's technician team, under the technician responsibility of the works' chief geologist and bunched the whole list of the executed activity, the methodology and the reached results. It should be conclusive as to the reserves existence, its dimensions and the ore characterization, and will have all the elements indispensable to the technician, business and politics decisions which will be followed.

3.1.10. Budget

It is considerer on this study the reference Exchange rate as being US$1.00 = R$1,85

For the execution of the exploration works described above, it is esteem a total cost of **US$ 666,900.00**.

Cone Mine Exploration - www.cme7.com.br
Av: Luiz Paulo Franco, 345 - 1º Andar / Cep.: 30320-570
Tel.: +55 (31) 3282-3232 - Fax.: +55 (31) 3286-5111
Belo Horizonte - MG - Brasil

3.2 MINE WORK AND PROCESSING

The cost with the mine work of iron ore for monthly production estimate in 250.000 tons and its respective processing are presented as follow:

3.2.1. Production Datas (Monthly Estimates)

					Production rate	
Mines' extraction	9	h/day	26	day/month	**1068**	**t/hour**
Processing	9	h/day	26	day/month	**855**	**t/hour**

Monthly Production of the Extracted Ore = 250.000 tons

Monthly Production of the Processed Ore = 200.000 tons

*P.S..: Considering a recovery of 80% in the process.

Considering the relation sterile/ore = 2/1

3.2.2 Cost of the Mine work (Monthly Estimates)

Cut and ROM Load (R$1,00/t) = R$ 250.000,00

ROM Transport = R$ 200.000,00

Drilling and Dismounting = R$ 250.000,00

Road Maintenance = R$ 100.000,00

Sterile Transport (R$0,50/t) = R$ 250.000,00

Cut and Load of Sterile (R$0,50/t) = R$ 250.000,00

General Expenses = R$ 87.500,00

Unit Cost = R$ 5,55 / tonelada (US$ 3.00)

MONTHLY TOTAL (USD) = US$ 750,000.00

3.2.3 Cost of the Processing (Monthly Estimates)

Material/Maintenance = R$300.000,00

Crusher Feeding = R$150.000,00

Mill Maintenance = R$ 50.000,00

Flotation = R$ 200.000,00

Electric Energy = R$ 600.000,00

General Expenses = R$ 120.000,00

Quality Control = R$60.000,00

Unit Cost = R$ 7,40 (US$ 4.00) / ton of product

MONTHLY TOTAL (USD) = US$ 800,000.00

3.3 THE PIPELINE OPERATION

The costs of the pipeline operation are esteemed in US$0.65 / ton of ore transported up to the port.

MONTHLY TOTAL (USD) = US$ 130,000.00

3.6 PORT

The port costs involve unloading, stockage and loading in ships. The estimated average cost for ports in Rio de Janeiro is about R$27,75/ton of sinter-feed ore.

Unit Cost = R$ 27,75 (US$ 15.00) / ton

MONTHLY TOTAL (USD) = US$3,000,000.00

4 – ECONOMIC POTENTIAL OF THE ENTERPRISE

Verifying the exploration positive result according to the accomplished estimates, the enterprise will make possible the commercialization of the ore FOB (Rio de Janeiro) to the monthly cost of **US$ 4,608,378.38** to 200 thousand commercialized tons. Considering an extra US$10.00/ton for additional costs, this give us a FOB cost of **US$33.04/ton.**

This represents a rude profit potential of **US$51.96/**commercialized **ton,** equivalent of **157% of a profit over the total cost** of the productive chain.

Consideration: Exchange: US$1.00 = R$1,85 and sale's value of the ore = US$ 85.00)