ANNEX –A

SECRETARY'S CERTIFICATE

97 SEP 10 AM 11 43

ATLAS CONSOLIDATED MINING AND DEVELOPMENT CORPORATION
2nd Floor, Phelps Dodge Annex Building, No. 2 Pioneer St., Mandaluyong City, Metro Manila, Philippines
Fax (632) 633-3759 MCPO Box 247, Makati, Metro Manila, Philippines

A. SORIANO CORP.
GENERAL MANAGERS
CABLE ADDRESS
COPPER
TELEPHONE
635-0063 to 65

CERTIFICATION

I, BENJAMIN V. ABELA, Corporate Secretary of ATLAS CONSOLIDATED MINING AND DEVELOPMENT CORPORATION, a corporation duly organized and existing under and by virtue of the laws of the Philippines, do hereby certify that at the regular meeting of the Board of Directors held on July 30, 1997, the following resolution was approved:

ANNEX-A

RESOLVED, That the President and Chief Executive Officer, any one of the Senior Vice President, Vice President, Senior Assistant Vice President and Assistant Vice President, is hereby authorized to sign and execute in behalf of the Corporation, applications for Mineral Production Sharing Agreement (MPSA) or any mode of agreement with the government, application for Special Mines Permit, application for Small Scale Mining Quarry Permit, application for Sand and Gravel Permit, Water Permit, Prospecting Permit, Exploration Permit, Foreshore Lease, Miscellaneous Lease and other corresponding Agreements, Leases, Permits applied, abandonment of MPSA application areas, mining claims/rights, and all other papers, or documents as may be required by Department of Environment and Natural Resources, Mines and Geo-sciences Bureau, Forest Management Services, Land Management Services, Environmental Management Services and/or other concerned government agency charged with the issuance of the above-mentioned mining agreements/leases and/or permits.

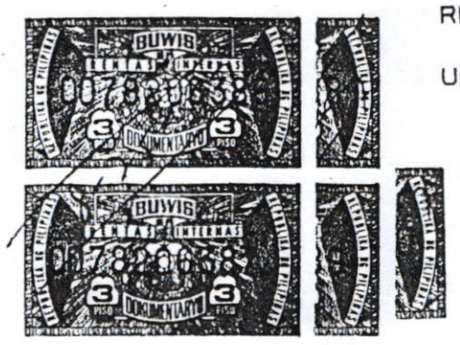
IN WITNESS WHEREOF, I have hereunto set my hand this 25th day of August, 1997, at Makati City.

BENJAMIN V. ABELA
Corporate Secretary

REPUBLIC OF THE PHILIPPINES)
MAKATI, METRO MANILA) S.S.

SUBSCRIBED AND SWORN to before me this 25th day of August, 1997, affiant exhibited to me his Com. Tax. Cert. No. 1894798 issued at Makati City on January 30, 1997.

Doc. No. 446;
Page No. 91;
Book No. I;
Series of 1997



REGINALDO L. HERNANDEZ
Notary Public
Until December 31, 1998
PTR No. 8003091
Issued at Makati
on January 13, 1997

ANNEX – B

LOCATION MAP
OR
SKETCH PLAN

TIE POINT : *MBM No. 9 , Talisay-Minglanilla Estate (Flr-133, Case-2)*
N. 1139483.07 *Lat. = 10° 18' 15.66"*
E. 580728.75 *Long. = 123° 44' 13.26"*

TIE LINE : *N. 47° 45' W., 3385.62 M. From MBM No. 9, Tal.-Ming. Estate (Flr-133, Case-2)*
To Corner No. "1"

GEOGRAPHIC COORDINATES		
CORNERS	LATITUDE	LONGITUDE
1	10° 19' 29.936"	123° 42' 51.065"
2	10° 19' 39.105"	123° 42' 54.458"
3	10° 19' 35.744"	123° 43' 03.716"
4	10° 19' 58.471"	123° 43' 12.128"
5	10° 19' 58.463"	123° 43' 15.763"
6	10° 20' 17.991"	123° 43' 15.808"
7	10° 20' 17.964"	123° 43' 28.111"
8	10° 20' 47.887"	123° 43' 27.150"
9	10° 20' 48.817"	123° 43' 56.718"
10	10° 20' 19.539"	123° 43' 57.656"
11	10° 20' 15.938"	123° 43' 51.853"
12	10° 20' 13.010"	123° 43' 51.946"
13	10° 20' 12.885"	123° 43' 48.004"
14	10° 20' 09.469"	123° 43' 48.114"
15	10° 20' 09.365"	123° 43' 44.828"
16	10° 20' 08.160"	123° 43' 45.366"
17	10° 19' 48.361"	123° 43' 45.321"
18	10° 19' 48.653"	123° 43' 35.461"
19	10° 19' 29.125"	123° 43' 35.416"
20	10° 19' 29.131"	123° 43' 32.773"
21	10° 19' 25.663"	123° 43' 31.490"
22	10° 19' 29.023"	123° 43' 22.232"
23	10° 19' 19.885"	123° 43' 18.839"
24	10° 19' 23.215"	123° 43' 09.581"
25	10° 19' 32.384"	123° 43' 12.974"
26	10° 19' 29.023"	123° 43' 22.232"
27	10° 19' 38.191"	123° 43' 25.626"
28	10° 19' 41.551"	123° 43' 16.368"
29	10° 19' 32.383"	123° 43' 12.974"
30	10° 19' 35.744"	123° 43' 03.716"
31	10° 19' 26.575"	123° 43' 00.323"

N

LOCATION PLAN

OF

AREA APPLIED / PROPOSED
FOR MINERAL PRODUCTION SHARING AGREEMENT (MPSA)
APPLICATION NO. APSA - 00369VII

CONVERSION OF MINING LEASE CONTRACT
NOS. LLC-V-261, V- 117,V-1080, V-1081, MRD-18 AND MRD-80 INTO MPSA

AS PREPARED FOR

ATLAS CONSOLIDATED MINING & DEVELOPMENT CORPORATION,
HRS. OF JOSE P. VELEZ, HRS. OF MANUEL CUENCO,
ANTONIO V. CUENCO AND JON RAMON ABOITIZ

SITUATED IN THE
BARANGAY OF BIGA
CITY OF TOLEDO
PROVINCE OF CEBU
ISLAND OF CEBU

CONTAINING AN AREA OF 234.2875 HAS.
SCALE OF 1 : 50,000 M

ANNEX – C

3-YEAR WORK PROGRAM

THREE (3) YEAR
COMMERCIAL OPERATION WORK PROGRAM

(Year 2 to 4 of Resumed Operations)

TO SUPPORT

APPLICATION FOR MINERAL PRODUCTION SHARING AGREEMENT (MPSA)
(CONVERSION OF MINING LEASE CONTRACT NOS.
LLC-V-261; V-1117; V-1080; V-1081, AND MRD-80 INTO MPSA)

OF

ATLAS CONSOLIDATED MINING AND DEVELOPMENT CORPORATION, HEIRS OF
JOSE P. VELEZ, HEIRS OF MANUEL CUENCO,
ANTONIO V. CUENCO AND JON R. ABOITIZ
(CONTRACTOR)

BY:

ATLAS CONSOLIDATED MINING AND DEVELOPMENT CORPORATION (ACMDC)
(For itself and as Attorney-In-Fact of Jose P. Velez, Heirs of Manuel Cuenco,
Antonio V. Cuenco and Jon R. Aboitiz)
(OPERATOR)

TABLE OF CONTENTS

1.0 CORPORATE DATA

1.1 Project Name

Carmen Mining Project

1.2 Company Name, Address, Telephone, FAX Number

Atlas Consolidated Mining and Development Corporation

Head Office: 6th Floor Quad Alpha Centrum
125 Pioneer Street, Mandaluyong City
Tel. Nos. (02)635-2387 / 635-4495
Fax No. (02) 633-3759

1.3 Contact Person/Designation

Mr. Constante P. Bumanglag
Vice President for Operations

2.0 PROJECT DESCRIPTION

Carmen Mining Project

2.1 Project Details

2.1.1 Location

The Carmen Underground Lift-1 Mining Area is within 15-mining claims in Biga, Toledo City with an area of 119.1663 Has. under valid and existing Mining Lease Contracts issued to ACMDC and within another 15-mining claims also in Biga, Toledo City with an area of 115.1212 Has. also under valid and existing Mining Lease Contracts issued to various claim owners but covered with Operating Agreements with ACMDC, as the operator or a total of 30- leased mining claims, containing a total area of 234.2875 Has., as shown in Table-1 below.

Table No. 1. List of Mining Claims Covered by MPSA Application No. APSA-000369VII

A) Mining Claims owned by ACMDC

NAME OF CLAIMS		CLAIMOWNER	AREA (HAS.)	DATE DOL REGISTERED	MINING LEASE CONTRACT	
					NUMBER	ISSUED
1.	Josefa	ACMDC	9.0000	Sep. 13, 1956	V - 261	Jul. 6, 1959 (renewed)
2.	Margot	- do -	9.0000	- do -	- do -	- do -
3.	Marilyn	- do -	9.0000	- do -	- do -	- do -
4.	Art Fr.	- do -	7.9456	Jul. 11, 1953	V – 1117	Apr. 7, 1976
5.	Bar Fr.	- do -	4.0704	- do -	- do -	- do -
6.	Ike	- do -	9.0000	Jul. 25, 1953	- do -	- do -
7.	Jack	- do -	9.0000	- do -	- do -	- do -
8.	Joe	- do -	9.0000	- do -	- do -	- do -
9.	Lim	- do -	9.0000	- do -	- do -	- do -
10.	Nemy	- do -	9.0000	May 11, 1953	- do -	- do -
11.	Nimfa	- do -	9.0000	- do -	- do -	- do -

NAME OF CLAIMS		CLAIMOWNER	AREA (HAS.)	DATE DOL REGISTERED	MINING LEASE CONTRACT	
					NUMBER	ISSUED
12.	Pat	- do -	9.0000	May 11, 1953	V – 1117	Apr. 7, 1976
13.	Nong	- do -	9.0000	Jul. 11, 1953	- do -	- do -
14.	Rom Fr.	- do -	4.9555	Jul. 13, 1953	- do -	- do -
15.	Sol Fr.	- do -	3.1948	Aug. 7, 1953	- do -	- do -

T O T A L = 119.1663 Has.

B) Mining Claims under Agreement with ACMDC

NAME OF CLAIMS		CLAIMOWNER	AREA (HAS.)	DATE DOL REGISTERED	MINING LEASE CONTRACT	
					NUMBER	ISSUED
1.	La Alhambra	Jose P. Velez	9.0000	Oct. 18, 1956	V - 1080	Mar. 18, 1974
2.	La Perla	- do -	9.0000	- do -	- do -	- do -
3.	La Solidaridad	- do -	9.0000	- do -	- do -	- do -
4.	La Rosa	- do -	3.2852	- do -	- do -	- do -
5.	La Insular	- do -	9.0000	- do -	- do -	- do -
6.	La Vanguardia	Hrs. of Manuel Cuenco	9.0000	Oct. 18, 1956	V - 1081	Mar. 18, 1974
7.	La Dicha	- do -	9.0000	- do -	- do -	- do -
8.	La Verdad	- do -	9.0000	- do -	- do -	- do -
9.	La Castellana	- do -	9.0000	- do -	- do -	- do -
10.	La Salvacion	- do -	9.0000	- do -	- do -	- do -
11.	La Union	- do -	9.0000	- do -	- do -	- do -
12.	La Simpatica	- do -	9.0000	- do -	- do -	- do -
13.	James Fr.	Antonio V. Cuenco	2.1937	Apr. 26, 1974	MRD - 18	Sep. 1, 1976
14.	Eduardo II Fr.	Jon R. Aboitiz	2.2263	Mar. 4, 1969	MRD - 80	Jan. 9, 1978
15.	Eduardo III Fr.	- do -	8.4160	- do -	- do -	- do -

T O T A L = 115.1212 Has.

Summary:

Mining Claims owned by ACMDC ----------	119.1663	Has.
Mining Claims under Agreement with ACMDC --------	115.1212	Has.
Total Area =	234.2875	Has.

Attached is a Sketch Plan of Mining Claims covered by Mining Lease Contracts showing Carmen Mining Area marked as **Annex No. 1**.

2.1.2 Estimated Cost

2.1.2.1 Capital Cost

The rehabilitation period of the mines will be the first twenty-five (25) months of project life. All capital costs relevant to the rehabilitation and resumption of operations is covered within the first two years of project life. Total initial capital cost is PhP 9,715,490,000.00 or US$176.645 million based on PhP55:US$1 exchange rate.

Said amount covers all phases of rehabilitation; Mine Dewatering Cost, Reconditioning of Equipment, of the Underground Openings and others required to be done to enable the mine to produce an initial 1,000 MTPD on the 17th month. This production will gradually be increased to 42,000 MTPD in month 2 of year 4 when the new decline conveyor system shall have been operational. Table below shows the summary of initial capital expenditures. (PhP in 000,000)

DESCRIPTON	CAPITAL COST BY TIME		
	YEAR 1	YEAR 2	TOTAL CAPITAL
Mine Underground Works	1,296,351	1,268,553	2,564,904
H.E./Transport Svs/Geology	615,314	255,933	871,247
Concentrator	2,047,918	124,050	2,171,968
Quality Ass. & Port Facilities	135,702	682	136,384
Utilities	143,700	67,183	210,883
Power Plant	1,375,000	1,375,000	2,750,000
Infrastructure	134,818	-	134,818
Sub-total Direct Costs	5,748,803	3,091,401	8,840,204
Indirect Cost-Admin & Mgmt.	140,786	30,079	170,865
Project Management	82,500	27,500	110,000
Total Direct & Indirect Cost	5,972,089	3,148,980	9,121,069
VAT (10%)	-	-	-
Sub-total After VAT	5,972,089	3,148,980	9,121,069
Contingency(9.33% of non-turnkey cost)	428,908	165,512	594,421
Total Project Cost	6,400,997	3,314,492	9,715,490

Notes:
1. Forex – US$1:PhP55
2. Power: Month 1-32-Php 5.08/Kwh; Month 33 onward=Php 2.66/Kwh
3. Tailings Disposal at Biga Pit Total Cost is US$ 23.317M
4. Contingency: Initial Capital= 9.33%

2.1.2.2 Operating Cost

The estimated operating cost is PhP8,589,550,000.00 to cover the three-year period beginning year 2 of the resumed operations up to year 4.

Table No. 2. Annual Operating Costs Summary (PhP in Million)

COST CENTER	YEAR				TOTAL	
	1	2*	3	4	PhP	US$
Admin & Gen. Exp.	0	128.079	170.609	167.316	466.004	8.473
Geology/Min. Rights	0	17.177	35.822	36.767	89.766	1.632
H.E./Transport	0	669.852	551.427	64.016	1,285.295	23.369
Carmen Underground	0	-	1,096.943	743.971	1,840.914	33.471
Carmen Concentrator	0	945.655	1,727.349	1,678.217	4,351.221	79.113
Concentrate T'port	0	1.542	21.085	38.179	60.806	1.106
Sangi Port-Ship Loading	0	7.821	14.352	17.048	39.221	0.713
Q.A. Group	0	13.275	17.572	16.450	47.297	0.860
Contingency (5%)	0	89.170	181.758	138.098	409.026	7.437
Total	**0**	1,872.571	3,816.917	2,900.062	8,589.550	156.174

Forex Rate: $US1:PhP55
* Year-1 of Ore Production

2.1.3 Commodity

Copper, Gold and other mineral deposits found therein

2.1.4. Present Status of the Project (e.g. Rehabilitation and Operation Stage)

The Carmen Orebody, covered by Mining Lease Contract Nos. LLC-V-261, V-117, V-1080, V-1081, MRD-18 and MRD-80 has been in operation from 1977 by Open Pit Mining and from 1988 up to early part of 1994 by Underground Mining when ACMDC suspended its mining operation primarily because of a "muckrush" in the underground mine. The "muckrush" was the consequence of a typhoon that flooded the open pit operations combined with lack of proper backfill materials for the underground subsidence area at the floor of Carmen Pit. In addition, for four years prior to the suspension of copper production (1989 to 1993) the company was already experiencing financial difficulty, which affected certain operational priorities-aggravated by relatively low price of copper at that time.

Ore reserves at the time of the suspension were estimated to be some 881 million metric tonnes at a grade of 0.41% copper containing some 7.9 billion pounds of copper and 5 million ounces of gold.

In July 1997, Minoro Mining and Exploration Corporation (Minoro) entered into an agreement to buy out the major creditors of Atlas in exchange for a majority equity interest in the company. Minoro then completed a mine feasibility study, which indicated that the project was technically and economically viable. However, for one reason or another, Minoro failed to proceed with the reopening of the mines.

In October 2000, Atlas again entered into a debt-for-equity agreement with Alakor Corporation (Alakor), a Filipino company headed by one of Atlas' Board of Directors, Mr. Alfredo Ramos. Alakor eventually secured the majority shareholding of Atlas and on March 31, 2003, Mr. Alfredo Ramos was elected as President and Chairman of the Board.

2.1.5 Description of Mining Method

2.1.5.1 Open Pit Mining (South Carmen Pit)

Mining of South Carmen Pit will be started on the seventh month from the resumption of operations, by waste stripping at a rate of 38,000 MTPD.

Basically, the first stage in any open pit mining is designing the pit plans based on the ore reserve blocked-out by mapping, outcrop sampling and diamond drilling.

Actual mining operations consist of stripping the overburden until the ore is exposed, then the following sequence of events is undertaken:

a. Rotary drill-hole stakes are established at the top bench based on drill pattern prepared by pit planning engineers.

b. Blast holes are drilled using electric rotary drills at 18-meter depth including the three meter sub-grade to ensure good fragmentation and eliminate hard toes.

c. Sample cuttings are taken from every drill hole for laboratory analysis.

d. The blasting crew will load the holes with explosives, and blast.

e. Boundary contact between ore and waste is delineated after blasting using the ore situation map.

f. PC1600SP Komatsu Backhoe loads the materials to the haul trucks, and

g. The haul trucks transport the ore to the Carmen Concentrator's Primary Crusher, and the waste rocks to the underground subsidence area as backfilling materials.

South Carmen Pit is a small portion of the Greater Carmen Pit. It is located at the hanging wall side of the Carmen Orebody, which is at the southern section of the Greater Carmen Pit. The excavation (ore and waste extraction) is confined only within the 25.20 hectares surface area, which defines the pit limit of South Carmen Pit Mining Plan. Excavation will start from the upper benches at B+465 and progress downwards B+165 involving twenty-one (21) mining levels or benches of 15 meters height interval.

At the start of mining operations, access of pit equipment in going to B+465, the uppermost mining level of South Carmen Pit will be at the existing drainage berm at Carmen hanging wall with entry point at the junction of the drainage berm and H.E.-Biga Pit road at level +483 meter elevation. Initially, the pit equipment will either be travelled or transported in trailer-carrier to the drop-off point at level +483 m. elevation via the existing Carmen H.E. to Biga Pit road.

South Carmen Pit Design Parameters/Activities:

Designed Slopes and Bench Dimensions

The designed slopes and bench dimensions for the South Carmen Pit are shown below in Table No.3.

Table No. 3. South Carmen Pit Design Parameters

PARAMETER	VALUE
a) Back/overall slope	50°
b) Gypsiferrous Zone (75%)	52°
c) Non Gypsiferrous Zone (25%)	45°
d) Bank/Bench slope	65°
e) Mining Bench height	15 meters
f) Final Bench Height	30 meters (double benching with pre-split holes)

g)	Bench/berm width	14 meters
h)	Minimum haul road Width	30 meters
i)	Minimum Road Curve Radius	70 meters
j)	Maximum ramp gradient	8%
h)	Drainage Gradient	0.50-1.0%

Since most of the South Carmen Pit wall are competent with fractures mostly in-filled with gypsum and some quartz, which healed the fissures, the pit slope within the sulfate zone is designed at 52° with the application of double –benching and smooth wall blasting with pre-split holes. The ore is located within the gypsiferrous zone; therefore ore mining has been maximized resulting in a lower waste to ore ratio. Except for some possible localized minor wedge block/bench failures, no large-scale circular slope failures are expected as the fault structures in this area are mostly steeply dipping.

With the application of double benching technique, the corresponding berm width is also doubled from the usual seven meters wide for a normal 15-meter bench height, to 14 meters wide. This relatively wide berm is designed to accommodate rock debris in case of localized/minor bench failures.

At the start of mining operations, access of pit equipment in going to B+465, the uppermost mining level of South Carmen Pit will be at the existing drainage berm at Carmen hanging wall with entry point at the junction of the drainage berm and H.E.-Biga Pit road at level +483 meter elevation. Initially, the pit equipment will either be travelled or transported in trailer-carrier to the drop-off point at level +483 m. elevation via the existing Carmen H.E. to Biga Pit road.

Road and Ramps

All haul roads and ramps have minimum widths of 30 meters and a minimum curve radius of 70 meters to accommodate double passage of the existing 170-tonne hauling trucks. Maximum grade for the ramps is 8% whilst working berms have a gradient of 0.5% to 1.0% for drainage purposes.

Dewatering/Mine Drainage

Excessive water is a direct cause of many drainage problems both in the open pit and underground mines. A comprehensive mine drainage plan and design is therefore necessary to prevent the extra costs and production losses brought about by excessive water and drainage failures.

Carmen Pit is served by the +183 Drain Adit, which connects to the Sigpit-Biga Drain Tunnel, a dewatering tunnel purposely driven to drain water a both Biga and Carmen Pits. However, the +183 Drain Adit, is no longer serviceable at present condition as it is already covered with slide materials coming from Carmen North Slide that occurred on November 7, 2001 at the height of typhoon "Nanang".

The existing peripheral drainage that was constructed to divert the water coming from the limestone area above the proposed south Carmen Pit drains the surface run-off water towards Ilag River at the South. The said

drainage had helped preserve the pit walls over the years. Hence, pit walls within the mineralized metavolcanics at the southern hanging wall side of Carmen Pit are still intact and standing.

The bottom of Carmen Pit, most particularly at the south-end portion is submerged in ponded water up to +238.00 meter elevation. Dewatering of the said water pond is essential for the south Carmen Pit and the Carmen Underground mining operations in order to mine the open pit ore down to B+195 and to recover the exhaust ventilation raise, respectively.

Mine dewatering will be carried out by pumping the water outside the pit ands discharge at the through-cut at elevation +343 meters using a submersible pump installed at the pit bottom. Since the +183 drain adit at the north is no longer serviceable, a new adit will be driven at elev. +194 m. to intersect Sigpit-Biga Drain Tunnel at elev. +114.37 m.

Drilling and Blasting

- Drilling

The present pit drilling equipment at the mines consists of two (2) D55SP engine-driven Tamrock Drills. These are large diameter rotary drills intended for drilling blast holes using a 10.0-inch diameter tricone tungsten carbide drill bit. The Tamrock drill during its peak performance registered an average output of 400 meter or more than 20 blast holes per day.

Drilling pattern and spacing for blast holes varies from six meters by eight meters for hard formation, where good fragmentation is required. Up to eight meters by eleven meters for softer formations where only toe breaking is required. Blast holes are usually drilled to an 18-meter depth, including the three-meter sub-grade, to ensure god fragmentation and eliminate hard toes. Drill cuttings in each blast hole will be collected down to 15 meters depth for assaying of copper values for grade control purposes.

- Blasting

Explosives commonly used, as charges are ANFO and cartridge of primer and detonator. For totally dry holes, ANFO is poured directly from the ANFO mixing truck into the holes after the down and trunk lines are laid together with the primers and detonating fuses. All downlines are doubled to safeguard against costly and dangerous misfires. In the case of watery holes, the water is pumped out first using a submersible pump before the ANFO, bagged in polyethylene tubes is loaded into the blast holes. For holes with high water seepage, either deck loading is applied, with slurry as bottom loads and bagged ANFO at top loads, or all slurry load is applied.

2.1.5.2 Underground Mining (Carmen UG Lift-1)

The underground mining at Carmen Lift 1 is by the full-gravity block caving method. The system is long practiced and well established at Atlas' Cebu copper operations. DAS underground Lifts 1 and 2 were mined using the same method and, as such, the Atlas personnel who are

still available are regarded as highly experienced and technically capable in applying the system.

As shown in **Annex No. 2** block caving involves the development of the haulage, grizzly and undercut levels as well as transfer and draw-raises that interconnect the three levels. Caving of the block is induced through blasting a six (6)-meter slice of the ore column at the undercut level. After the pillar is removed, the ore column becomes unstable and starts to cave or fall down by gravity. The broken ore is then drawn at controlled rates through the draw points and coursed to the haulage level via transfer raises. **Annex No. 3** and **Annex No. 4** show the layout sketches of these arrangements.

In the Carmen Lift 1 set-up, the ore from the transfer raises will be collected by trains each consisting of 12 bottom-dump cars having 15-tonne capacity. The trains are pulled each by a 20-tonne Goodman locomotive powered by two 100-HP motors. The ore is then tipped into any of the twin ore-passes that connect to a chamber containing two gyratory crushers (30-inch by 70-inch and 30-inch by 60-inch), which perform size reduction. Finally, the crushed ore are transported to the surface via a 42-inch wide conveyor having a design capacity of 2,100 tonnes per hour.

The Carmen Lift 1 Orebody is divided into 16 panels, all of which have equal width of 59 meters. Their lengths vary between 120 and 310 meters, and most panels are longer at the mid- section of the Orebody. The heights of the ore columns vary between 160 and 335 meters, the lowest of which are the southern units located directly below the open pit base. The height of the ore columns increases as they extend towards the north away from the open pit.

2.1.6. Estimated Daily/Annual Production

Shown in **Table No. 4** below is the summary of production forecast from the combined South Carmen Pit and the Carmen Underground Lift-1 Orebody covering a period three years (years 2 to 4).

South Carmen Pit will start ore production by Month-1 of year-2 at 10,000 MTPD while Mine Underground ore production starts at a rate of 1,000 MTPD in Month 5 of year-2 to consist purely of development ore. The ore tonnage from development will increase to 5,000 MTPD in Month 10 of Year-2 as more areas are being developed. Once the decline and overland conveyors are commissioned, underground ore deliveries will start at 12,100 MTPD on the second month of Year-3 and gradually increases until it reaches its production peak of 42,000 MTPD in Month 2 of Year-4.

Table No. 4. Summary of the South Carmen Pit and Carmen Underground Lift 1 Production Plan (3-year period, Years 2 to 4)

	YEAR			TOTAL
	2	3	4	
Tonnes Per Year	5,735,200	11,811,400	15,163,420	32,710,020
Tonnes per Day	15,917	32,667	41,900	30,161
Grade, % Cu.	0.33	0.44	0.47	0.43
Lbs. Cu.	32,636,514	96,914,321	136,126,694	265,677,529

2.1.7 Description of Process, Plant/Mill (rated capacity, type of processing)

The ore from the South Carmen Pit and Carmen Underground Lift-1 will be processed at Carmen Concentrator. Milling will start on month-16 at 10,300 MTPD. This will gradually increase to 42,000 MTPD in the early part of Year-4 at which time shaft hoisting will have been completely replaced by the new decline conveyor system.

2.1.7.1 Rated Capacity

Full milling capacity of Carmen Concentrator (CARCON) is 42,000 MTPD

2.1.7.2 Type of Processing

Primary Crushing

Primary crushing of run-of-mine ore will be carried out through a 30-inch x 60-inch Traylor gyratory crusher driven by a 200-HP motor, and a 30-inch by 70-inch Kobe Allis Chalmers gyratory crusher driven by a 400-Hpp motor. Each circuit will be composed of two 3,000-metric ton capacity ore bins, a 72-inch wide SACO pan feeder for the grizzly feed, a 48-inch SACO pan feeder for the crusher product, a stationary grizzly before the crusher with two- inch / four-inch slots, and a product chute.

Crushed ore will be fed into a common 2134 mm wide picking conveyor, where tramp materials will be taken out. From this point, ore will be transported towards the coarse ore stockpile through the decline tunnel conveyor #1 (1067 mm wide by 1,800 meters long), overland conveyor #2 (1067 mm wide by 440 meters long) and overland conveyor #3 (1067 mm wide by 600 meters long). Conveyor #1 will be driven by two 1,340 HP motors while conveyor #2 and conveyor #3 will each be driven by two 1,000 HP motors. The coarse ore stockpile will have a capacity of 120,000 metric tons (live capacity will be 90,000 metric tons).

Screening and Secondary/Tertiary Crushing

Ore will be drawn from the coarse ore stockpile by eight-belt feeders (each 1219 mm wide by 5.5 m. long) feeding five conveyors (each 1067 mm wide by 78 m. long) which in turn will feed five double-decked vibrating screens (each 2.4 m. wide by 6 m. long). The upper decks will be rubberized with 38-mm square apertures while the lower decks will have wire cloths with slots measuring 12.7 mm wide by 102 mm long. Each belt feeder will be driven by 30-HP variable-speed motor while 50-HP fixed speed motors will drive the feed conveyors and screens.

The oversize of the upper and lower deck screens will go to a 700-metric ton surge bin where it will be drawn by three belt feeders (each measuring 1219 mm wide by 5.5 m. long) towards three 1084 Hydrocone secondary crushers that will be set at a 15- to 25-millimeter closed side setting and driven by 500-HP motors. The crusher product will be transported to the screening plant by conveyor #3 (1372 mm wide by 537

m. long in size). The undersize of the primary screens will go to conveyor #4 (1067 mm wide by 354 m. long in size).

From conveyor #3, tripper car #2 will distribute the ore to the screening plant's 4,000-ton capacity bin. The ore will be then drawn through ten belt feeders, each measuring 2134 mm wide by 3.7 m. long, towards ten single-decked vibrating screens, each having 2.44 m. wide by 6 m. long dimension. Through conveyor #6 (1219 mm wide by 530 m. long), the oversize of the screens will be transported and distributed by tripper car #1 to the 2,000-ton tertiary crusher bin where it will be drawn by six belt feeders (each 1219 mm wide by 11 m. long) towards five Hydrocone crushers and a seven-foot Symons cone crusher. The crushers will be set at 8- to 12-millimeter closed side setting. The tertiary crusher product will return to the screening plant through conveyor #3 together with the secondary crusher products.

The screening plant's undersize will be handled by conveyor #5 (1219 mm wide by 192 m. long). Together with the primary screen undersize of conveyor #4, both will be received by conveyor #7A (1219 mm wide by 177 m. long) which in turn will feed conveyor #7B (1219 mm wide by 256 m. long). With tripper car #3, ore from conveyor #7B will be distributed to the fine ore bins.

The mainline conveyor drive motor ratings are as shown in Table No. 5 below.

Table No. 5. Mainline Conveyor Drive Motor Ratings

Conveyor Number	Drive Motor Rating
3	1140 Hp
4	125 Hp
5	125 Hp
6	2 x 200 Hp
7A	300 Hp
7B	200 Hp

The crushing plant product will be sized at 90% to 95% passing 0.5 inches.

Primary Grinding

After the ore had been reduced to size minus 0.5 inches in three stages of crushing, it will then be subjected to a single-staged wet grinding in a battery of primary ball mills that operate in close-circuit with hydro-cyclone classifiers. Slurry densities will be maintained at the optimum range of 70% to 80% solids inside the mills and, at the discharge sump, the slurry will be diluted to 65% to 70% solids prior to pumping it to a cluster of hydro-cyclones that will operate at a 100-mesh separation size. About 60% unfinished product will report to the underflow which eventually will be recycled to the ball mills comprising the circulating load which will be maintained at 250% to 300%.

Coming out at densities of 1,300 to 1,350 grams per liter, the cyclone overflows will be controlled at a mesh-of-grind of 90% to 95% passing 48-mesh. To attain this while at the same time optimizing throughputs, the ball charge inside the mills will be normally kept at 40%

to 42% of its inside volume. This value will be maintained through the daily make-up charge of ball weights based on actual ball level surveys done every 20 days when the mill circuit will go through its regular preventative maintenance schedule. This ball charge will consist of 20% of 3.5-inch diameter balls and 80% of 3.0-inch diameter balls.

From the 90,000-metric ton capacity fine ore bin (live capacity of 60,000 metric tons), ore will be drawn by 15 belt feeders consisting of six fixed-speed units (each 1219 mm wide by 7.6 m. long) and nine variable-speed units (six of which are 1219 mm wide by 6 m. long and three of which will be 1219 mm wide by 5.5 m. long). The latter of the variable-speed units will feed the feed conveyor of ball mill #7, while the feed conveyors of ball mill #1 to ball mill #6 will be fed each by one fixed-speed and one variable-speed belt feeder. Ball mill #1 to ball mill # 5 are Kobe Allis Chalmers overflow type ball mills (each measuring 16.5 inches in diameter by 22 feet long) will be driven by 3,500-HP synchronous motors. Ball mill #6 and ball mill #7 are Kobe Allis Chalmers overflow type ball mills (each measuring 16.5 inches in diameter by 28 feet long) driven by 4,500-HP motors. The mills will be rotated at 13 rpm or 68% of critical speed. Each grinding circuit will be equipped with slurry pumps to handle the discharge and a cluster of six D-26 Krebs cyclones for size classification. The slurry pumps of ball mill #1 to ball mill #5 will be 18-inch by 16-inch Thomas Denver pumps will be driven by 300-HP motors. Ball mill #6 and ball mill #7 will have 20-inch by 18-inch Kelly Lewis slurry pumps driven by 450-HP motors.

Auxiliary equipment will include:

a) Three compressors (one 200-HP Chicago-Pneumatic and two back-up 50-HP Tamrocks) to provide air to the mill clutches at 90 to 100 psi.
b) Three Galigher vertical six-inch slurry pumps to handle floor spillage; and
c) Seven 48-inch wide Ramsey automatic sample cutters for regular sampling of each mill's cyclone overflow streams.

Slaked lime, to raise the alkalinity to pH 9.0 to 9.5, and the primary collector, which could be a weak xanthate or a dithiophosphate type, will be added to the ball mills.

Flotation and Regrinding

Cyclone overflow streams will converge at two distributor boxes where water will be added to attain densities of 1,240 to 1,260 grams per liter. From the distributor boxes the slurry will be distributed to seven banks of rougher flotation cells consisting of six banks of 15 self-aerating Wemco cells (each 500 cubic feet with impellers driven by 40-HP motors) in a 3-4-4-4 cell arrangement and one bank of 7 self-aerating Wemco cells (each 1000 cubic feet with impellers driven by 75-HP motors) in a 3-4 cell arrangement. The secondary collector, a stronger or longer-carbon-chain type xanthate, will be added at the junction boxes.

Earlier inside the mills, the primary collectors (dithiophosphates) and pH regulator (milk-of-lime) will have been added to allow sufficient conditioning contact with the freshly created surfaces of the ore. Since the

primary collectors will be selective to chalcopyrites, most of these minerals (about 70%) are recovered in the first half of the rougher banks. Addition of the stronger secondary collector (long-chained xanthate) activates the pyrites and allows their recovery mostly in the second half of the rougher banks. About 15% to 20% more chalcopyrites will be recovered here for a total rougher recovery of 85% to 90%. Pyrite recovery though will be only about 30% to 35% because operating parameters (particularly the pH range) will be normally established to maximize the recovery of the main product that is chalcopyrite. Optimum pyrite recovery will be attainable at natural pH levels of 7.5 to 8.0 but since pyrite will be only a by-product, its recovery will be given lesser priority.

Polypropylene or polyethylene glycol frothers will be used to create workable froths. Addition points will be set at the distributors before the rougher banks and at three junction boxes along each bank.

The combined rougher concentrate will then be subjected to a regrinding process to break up the middlings by grinding the particles to 70% to 80% passing 200-mesh. The regrind system will include two Kobe Allis Chalmers ball mills (each 9 feet in diameter by 15 feet long) driven by 600-HP synchronous motors and charged with 1.25-inch diameter steel balls up to 40% of their volumes. The ball mill will discharge to a common sump from which two Warman pumps (each 12-inch by 10-inch unit with 250-HP drives) will send the discharge towards two sets of circular cyclone clusters (each cluster has six D-20 Krebs cyclones). The oversize will return to the two regrind mills through a distributor while the undersize (cyclone overflow as 80% passing 200-mesh) will gravitate through an open launder to the insol cleaner stage.

At the insol cleaner stage, all free sulphides and those liberated from the middlings in the regrinding process will be refloated while the gangue minerals (mostly silica which is insoluble to single acids) will be dropped. It will be carried out in two banks of eight Wemco cells (each 300 cubic feet driven by 15-HP motors) in a 4-4-cell arrangement. Flotation time will be nine minutes at a density of 1,110 grams per liter. The tailings may either be returned to the rougher or thrown as part of the final tailings together with the rougher tails. The concentrates will be dropped to a common sump together with additional lime slurry to raise the alkalinity to pH 12.0 to 12.5. From the sump, the slurry will be transported through two Warman horizontal pumps (each 10-inch by 8-inch unit driven by 100-HP motors) towards the selective cleaner section.

At the selective cleaner section, chalcopyrite and other copper-bearing minerals (bornite and occasionally chalcocite) will be re-floated. Pyrites will be dropped out because its collector coatings will be destroyed in a very high alkaline medium. Selective cleaning will be done in three stages plus a scavenger bank for its tailings. It will operate in a closed circuit. The equipment involved will be as follows.

a) A first cleaner consists of two banks of eight Wemco cells (each 300 cubic feet driven by 15-HP motors) arranged in 4-4 levels. The concentrate will go to two sumps each equipped with two Galigher eight-inch vertical pumps. The tailings will flow by gravity towards the selective scavenger

banks. Flotation time will be about twelve (12) minutes at a density of 1,100 grams per liter.

b) A second cleaner will consist of two banks of five Wemco cells (each 300 cubic feet driven by 15-HP motors) in one level. The concentrate will go to two sumps each equipped with two Galigher six-inch vertical pumps. The tailings will go to the selective scavenger concentrate sumps. Flotation time will be nine (9) minutes at a density of 1,090 grams per liter.

c) A third cleaner will consist of two banks of three Wemco cells (each 300 cubic feet driven by 15-HP motors) in one level. The final concentrate will go through an open launder towards the thickener while the tailing will flow by gravity towards the second cleaner banks. Flotation time is nine (9) minutes at a density of 1,080 grams per liter.

Automatic sample cutters will take regular samples from each of the seven rougher bank tailings, the insol cleaner tails, the pyrite cyclone underflow and the third cleaner or final copper concentrates.

From this circuit, final copper concentrates from the third cleaner and pyrite concentrates from the selective scavenger tails will go separate ways towards their respective dewatering stages.

Dewatering

Copper Concentrate Dewatering

The third cleaner or final concentrate, at a density of 1,100 grams per liter, will go to one of two thickeners (each 80-foot diameter by 16-foot high with a 10-HP driven cable torque rake mechanism). The thickened slurry, at a density of 1,800 to 1,900 grams per liter, will go to a sump equipped with two Warman horizontal pumps (each 8-inch by 6-inch type driven by a 75-HP motor). Clear water overflow will gravitate through an 18-inch diameter pipe towards the reclaimed water sump near the tailings thickeners.

The thickened slurry will be filtered in three Eimco drum filters (each 12 feet in diameter by 14 feet long) to come out as cake with 10% to 11% moisture. Three Nash pumps, each driven by a 125-HP motor, will provide the required 20 to 25 inches of mercury vacuum. Each filter drum will be driven by 10-HP motor while its rakes will be driven by 5-HP motor. Filtrate from each filter will go to separate tanks equipped with 10-HP Krogh water pumps. Pressurized air for cake blowing will be tapped from the mill compressor house. The filtration set-up will be equipped with a moisture trap located 80 feet above the vacuum pumps and a stabilizer sump at the pump level.

Pyrite Concentrate Dewatering

The selective scavenger tailing will be pumped at 15 to 25 psi towards the pyrite circular cyclone cluster consisting of six D-20 cyclones. The underflow will be pyrite concentrate while the overflow will flow towards a hydro-separator (55 feet in diameter by 12 feet high) where it will be thickened to a density of 1,250 to 1,300 grams per liter. This hydro-separator underflow will then be pumped back to the rougher using one of two Warman horizontal pumps (each 12-inch by 10-inch unit). The clean hydro-separator overflow will be discarded to prevent this high-alkaline water from returning to the rougher circuit so as not to hamper pyrite recovery.

The cyclone underflow, with a density of 1,800 to 2,000 grams per liter, will be fed to two Dorr-Oliver filters (each 12 feet in diameter by 14 feet long and equipped with water receivers and filtrate pumps similar to the copper filters). Vacuum will be created through two Nash pumps connected in series with the copper vacuum pumps. Filter cakes come out with 8% to 10% moisture.

2.1.7.3 Copper / Pyrite Concentrate Handling

Concentrates will be piled in separate bins and, after passing through fixed grizzly bars with four-inch slots to entrap tramp metals and other materials, will then be loaded by front-end loaders into 10 to 15-ton trucks. The concentrates will be transported to the Sangi Terminal about 15 kilometers away. After having their weights recorded, the concentrates will be unloaded and piled at the Sangi concentrate bins, which will be equipped with a conveying system for loading the concentrates to bulk ship carriers. The conveying system will load at a maximum rate of 300 metric tons per hour. Concentrate shipments will be in batches of 4,000 to 6,000 metric tonnes.

2.2 Mineral Reserves

2.2.1 Reserves (tonnes in each category)

The minable ore reserve statement for the Carmen orebody is 191.227 million metric tons (MMT) at 0.39% copper as shown in Table No. 6 below. The ore reserve grade has been calculated using the Inverse Distance Square (IDS) method. Ore block modeling was carried-out by the use of an IBM model 370-125 mainframe computer.

Estimation of the minable tonnage involves the determination of the quantity of ore falling within the mining blocks that are practically and economically extractable. The delineation of the mining block boundaries is computer-generated utilizing the "Break Even Block Height" (BEBH) formula. The BEBH is the ratio of the cost of development per draw point area and the profit realizable for every increment of one-meter height of the same draw point area.

Table No. 6: Carmen Ore Resource/Reserves Statement as of May 2004

SOURCE	GEOLOGIC RESERVE		MINEABLE RESERVE	
	MM DMT	% Cu	MM DMT	% Cu
Open Pit (+165)	29.913	0.37	9.000	0.31
CUG Lift 1 (-27 UCL)	163.517	0.41	132.025	0.40
CUG Lift 2 (-155 UCL)	67.398	0.44	50.202	0.39
CUG Lift 3 (-300 UCL)	15.215	0.44		
Total All Sources	**276.043**	**0.41**	**191.227**	**0.39**

2.2.2. Average Grade of Ore

Average grade of minable copper ore is 0.39% Cu.

2.2.3. Cut-off Grade

Cut-off grade is set at 0.30% Cu.

2.2.4. Estimated Mine Life (years)

At the projected mining rate of 42,000 MTPD (15,204,000 MTPY the present minable reserve of 191.227 million metric tons (MMT) is estimated to have a mining life of 12.5 years.

2.2.5. Potential for Additional Reserves

The present geologic reserve of 276.043 M DMT is expected to increase considerably, as additional exploration holes will be drilled to determine the downward and horizontal extension of Carmen Orebody.

2.3 Access/Transportation

2.3.1. Road (Preference and alternatives)

a) Preference – Passing the Naga-Uling Road

The site can be reached in about 1-hour from Cebu City by private or public utility vehicle passing the 42 km. Naga-Uling-Toledo Highway up to the ACMDC main gate at Bo. Don Andres Soriano, Toledo City, thence by a 5-km. Company road to the site.

b) Alternative – Passing the Tabunok-Manipis Road

The site can also be reached in about 50 minutes from Cebu City by private or public utility vehicle passing the shorter 34 km. Tabunok-Manipis-Toledo National Road up to the ACMDC main gate at Bo. Don Andres Soriano, Toledo City, thence by a 5-km. Company road to the site.

2.3.2 Air Access (origin and destination point)

a) From Manila, the site can be reached by commercial flight, which takes about 1-hour to Mactan Domestic Airport, thence by land trip

passing either the Naga-Uling-Toledo Highway or the Tabunok-Manipis-Toledo National Road up to the ACMDC main gate at Bo. Don Andres Soriano, Toledo City, thence by a 5-km. Company road to the site. Estimated travel time consumed by air and land trips from Manila to the site is 2.5 hours.

b) From Manila, the site can also be reached in about 1.8 hours by chartered plane direct to the Company airport in Barangay Don Andres Soriano, Toledo City, thence by car or pick-up passing a 2.5 km. road towards the site. Estimated total time consumed from Manila to the site is 2 hours.

2.3.3 Shipping (preferred port facilities and alternatives)

From North Harbor, Manila, the site can be reached by commercial ships in about 21 hours to Cebu City, thence by land trip passing either the Naga-Uling-Toledo Highway or the Tabunok-Manipis-Toledo National Road up to the ACMDC main gate at Bo. Don Andres Soriano, Toledo City, Total time consumed from Manila to the site is 22 hours.

2.4 Utilities

2.4.1. Power Supply Requirements and Alternatives

The power demand of the project will average 42 MW, with peak of 52.5 MW.

This power requirement will be drawn from a 50MW coal-fired facility to be financed by Atlas that would be part of the Mirant (Toledo Power Company) expansion at a cost of US$50 Million. Power cost under this arrangement will be Pesos 2.66/Kwh.

2.4.2 Water Supply Requirements and Alternatives

The total water demand is about 15,500 gpm of which the bulk (about 14,500 gpm) is for industrial use within the mine. The other 1,000 gpm is for the domestic households inside the mine complex and outside at Barrio DAS.

ACMDC's existing Malubog Dam will provide the water requirement, presently with impounding capacity of 4.0 billion gallons. It has a watershed of about 7,000 Has. The dam is estimated to generate 31,000 gpm with an average rainfall of 7.2 cm./month in the driest years.

Malubog Dam is situated some three (3) kilometers north of Carmen Concentrator. Its design has a factor of 2.0 against sliding and factor of 1.5 against overturning from an earthquake load with acceleration measuring 0.2'g'. The structural resistance of the gorge provided additional strength to the dam.

Two pipelines (each 30 inches in diameter by three kilometers long) carry water from the Malubog Dam. One of these pipelines supplies the Carcon freshwater pump station where eleven (11) 600-Hp Harland

pumps in turn deliver water to the Carcon head tanks. These tanks are about 1.5 kilometers away from the pump station.

The other pipeline delivers raw water via one of two 320-Hp booster pumps to a sump in Abaca for a distance of about 3 kilometers. The water from the sump is fed to and treated at the Abaca Water Treatment Plant (AWTP) for domestic use.

2.5 Mining and Milling Equipment

2.5.1. Mining Equipment

2.5.1.1 Mine Open Pit

Major mining and auxiliary equipment is shown in Table No. 7 below.

Table No. 7. Open Pit Mining Equipment

FUNCTION	EQUIPMENT DESCRIPTION	NO. OF UNITS
Blast Hole Drilling	D55SP Tamrock Drill (10" Dia.)	2
Loading	PC1600SP Komatsu Backhoe	2
Hauling	Wabco 170-Ton Truck	8
Road Maintenance	• Caterpillar 16G Grader • Wabco 120-ton Water Truck • 10-wheeler flat truck w/water tank	1 1 1
Drainage Maintenance	• Komatsu D155A Bulldozer • PC200 (0.50 m^3) Backhoe	3 1
Lube Truck	• Euclid 36TD	1
Tire Handler	• Caterpillar 988	1
Crane (Lifting)	• Linkbelt FMC-140 • 140-Ton P&H 750 ATC • 50 tonner	1 1 1

2.5.1.2 Mine Underground (Carmen UG Lift-1)

The mining equipment retrieved from the previous UG operations and stored at the surface. Some major equipment requires repair and general reconditioning, as follows;

List of Mining Equipment Subject for Repair and Rehabilitation

DESCRIPTION	QUANTITY
Production Locomotive	24 units
Production Cars	35 units
Development Locomotive	12 units
Development Cars	15 units
RS 85 Loader	8 units
Concrete Pots	12 units
Main Ventilation Fan	1

A number of major equipment is no longer serviceable and therefore needs to be replaced.

List of Mining Equipment to be purchased

DESCRIPTION	QUANTITY
Production Cars	207 units (fabricated)
Jackleg Rockdrill	60 units
Jumbo (Double Boom)	1 unit
Jumbo (Single Boom)	4 units
Long-hole Drill (for undercutting)	2 units
LHD 2 cu. Yd.	3 units
LHD 3 cu. Yd.	2 units
LHD 8 cu. Yd.	2 units
Main Ventilation	1 unit

2.5.2 Mineral Processing (Concentrator) Equipment

LIST OF MILLING EQUIPMENTS SUBJE T FOR REPAIR AND REHABILITATION (Concentrator Division)

DESCRIPTION	MANUFAC-TURER	SIZE	RATED HP	NO. OF UNITS (Existing)	For Procure-ment
1. PRIMARY CRUSHING					
Primary Crusher	Traylor	30" X 60"	200	* 1	
Primary Crusher	Kobe	30" X 70"	500	* 1	
Pan Feeders	Saco	72"W X 25'L	75	* 2	
Pan Feeder	Saco	48"W X 25'L	50		2
Picking Conveyor	Mitsuboshi	84"W X 50'L	100		1
Decline Conveyor No. 1	Saiag	42"W X 1.8 KM	2-1000	** 1	
Overland Conveyor No. 2	Saiag	42"W X 0.44 KM	1000	** 1	
Overland Conveyor No. 3	Saiag	42"W X 0.60 KM	1000	** 1	
Overhead Crane	Kone	40/10T	50	* 1	
Sub-Total			4,975		
2. PRIMARY SCREENING					
Belt Feeders	Mitsuboshi	48"W X 18'L	240	8	
Feed Conveyors	Mitsuboshi	42"W X 256'L	250	5	
Primary Screens	Hewitt-Robbins	8' W X 20'L	250	3	2
Oversize Conveyor Ps # 5	Mitsuboshi	42"W X 15'L	30	1	
Overhead Crane	Demag	16T	15	1	
Sub-Total			785		
3. SECONDARY AND TERTIARY CRUSHING					
S/C Belt Feeders	Mitsuboshi	48" W X 18'L	90	3	
T/C Belt Feeders	Mitsuboshi	48"W X 35'L	180	6	
Secondary Crushers	Hydrocone, Ac	1084	150	3	
Tertiary Crushers No. 1-5	Hydrocone, Ac	384	2500	5	
Tertiary Crushers No. 6	Symons	7FT	350	1	
Lube Pumps	Viking	1" X 1"	90	18	
Overhead Crane	Demag	32T/16T	30	1	
Sub-Total			3,390		

DESCRIPTION	MANUFAC-TURER	SIZE	RATED HP	NO. OF UNITS (Existing)	For Procure-ment
4. SCREENING PLANT (SEC. CREENING)					
Belt Feeders	Mitsuboshi	84"W X 12'L	300	10	
Secondary Screens	Tyrocket	8' W X 20'L	300	6	4
Overhead Crane	Demag	16T	15	1	
Sub-Total			615		
5. CONVEYING SYSTEM					
Conveyor # 3	Mitsuboshi	54"W X 1760'L	1760	1	
Conveyor # 4	Mitsuboshi	42"W X 1160'L	150	1	
Conveyor # 5	Mitsuboshi	48"W X 620'L	125	1	
Conveyor # 6	Mitsuboshi	48"W X 1740'L	2-200	1	
Conveyor # 7a	Mitsuboshi	48"W X 580'L	300	1	
Conveyor # 7b	Mitsuboshi	48"W X 840'L	200	1	
Tripper Cars	Fabricated	4-WHEEL	30	3	
Overhead Crane	Demag	10T	30	2	
Sub-Total			2,995		
6. GRINDING PLANT					
Belt Feeders Vs	Mitsuboshi	48"W X 25'L	270	9	
Belt Feeders, Fs	Mitsuboshi	48"W X 20'L	150	6	
Feed Conveyor	Mitsuboshi	30"W X 300'L	105	7	
Ball Mills	Kobe	16.5 DIA X 22'L	17500	5	
	Kobe	16.5 DIA X 29' L	9000	2	
Cyclone Pumps	Thomas Denver	18" X 16"	1500	5	
	KELLY-LEWIS PUMP	20" X 18"	800	1	1
Compressors	Chicago Pneumatic	1500 CFM	100	1	
	TAMROCK	0.088 CuM	100	2	
Spillage Pumps	Galigher	4"	90		3
Samplers/Splitters	Ramsey	30" Stroke	35		7
Overhead Crane	Demag (Main)	40T	40	1	
	DEMAG (SIDE)	5T	20	4	
Cyclones	Krebs	D-26			42
Sub-Total			29,710		
7. FLOTATION AND REGRINDING PLANT					
Rougher Bunks	Wemco	500 CU.FT.	3600	50	40
	WEMCO	1000 CU.FT.	525		7
Insol Cleaner Bunks A& B	Wemco	300 CU.FT.	240	13	3
First Cleaner Bunks A& B	Wemco	300 CU.FT.	240	13	3
Second Cleaner Bunk	Wemco	300 CU.FT.	150	5	3
Third Cleaner Bunk	Wemco	300 CU.FT.	90	5	3
Selective Scavenger Bunks A & B	Wemco	300 CU.FT.	240	13	3
Regrind Ball Mills	Kobe	9' X 15'	1200	2	
Cyclone Pumps	Warman	12" X 10"	400		2
Flotation Pumps	Warman	10" X 8"	800		8
	GALIGHER	8" DIA	300		4
	GALIGHER	6" DIA	200		4
Pyrite Cyclone Pumps	Warman	12" X 10"	400		2
Spillage Pumps	Galigher	4" DIA	120		4
Samplers/Splitters	Ramsey	54" Stroke	7		1
	RAMSEY	30" Stroke	50		10
Overhead Crane	Demag	10T	10		
Cyclones	Krebs	D-10			16
Sub-Total			8,572		

DESCRIPTION	MANUFAC-TURER	SIZE	RATED HP	NO. OF UNITS (Existing)	For Procure-ment
8. CONCENTRATE DEWATERING AND HANDLING					
Copper Thickeners	Dorr-Oliver	80' DIA X 16' H	20	2	
Cu Uf Pumps	Warman	8" X 6"	300		4
Copper Filters	Eimco	12' DIA X 14'L	45		3
Pyrite Filters	Eimco	12' DIA X 14'L	30		2
Filtrate Pumps	Krogh	4" X 3"	50		5
Vacuum Pumps	Nash	30 HG	75		5
Hydroseparator	Fabricated	55'DIA X 12H	10	1	
Hs Uf Pumps	Warman	12" X 10"	400		2
Spillage Pumps	Galigher	4" DIA	60		2
Overhead Crane	Demag	10T	10	1	
Sub-Total			1,000		
9. TAILINGS DISPOSAL AND WATER SUPPLY					
Tailings Thickener	Fabricated	250'DIA X 12"H	105	7	
Reclaimed Water Pumps	Harland	8" X 8"	2560	4	4
Fresh Water Pumps	Harland	8" X 8"	5500	7	4
Auxiliary Pumps	Harland	8" X 8"	640	2	
Sigpit Booster Pumps	Harland	8" X 8"	640	2	
Cps Booster Pumps	Harland	8" X 8"	1750	5	
Portal Pumps	Harland	8" X 8"	1000	2	
Awtp Pump	Torishima	8" X 8"	1200	2	
	HARLAND	6" X 6"	300	2	
Lbtds Pumps	Geho		5-1350		5
Spare	Geho				1
Sub-Total			20,445		
10. CARMEN LIME PLANT					
Jaw Crusher	Ceda Rapids	24" X 36"	100		1
Pan Feeder	Pioneer-Oro	48"W X 20'L	20	1	
Trommel/Scrubber	Fabricated	4" DIA X 8L	50	1	
Aggregate Conveyor # 1	Local Belt	24"W X 50'L	20		1
Aggregate Conveyor # 2	Local Belt	24"W X 50'L	20		1
Aggregate Conveyor # 3	Local Belt	24"W X 30'L	20		1
Aggregate Conveyor # 4	Local Belt	24"W X 100'L	50		1
Belt Feeder	Local Belt	24"W X 12'L	5	1	
Lime Kiln Feed Conv. # 6	Local Belt	24"W X 60';	20	1	
K1 Prod. Conveyor # 7	Heat Resistant	24"W X 20'L	10	1	
K2 Prod. Conveyor # 8	Heat Resistant	24"W X 20'L	10	1	
Common Product Conv. # 10	Heat Resistant	24"W X 20'L	20	1	
Induced Draft Fan			2250	3	
Turbo Blower			120	3	
Compressor			40	4	
Fuel Pump			30	3	
Primary Heater			50	1	
Sec. Heater			120	4	
Dealkalizer Pump	Warman	2" X 1-1/2"	5	1	
Cooling Water Pump	Warman	10" X 8"	225	3	
Recycle Water Pump	Warman	10" X 8"	225	3	
Vibrators			4	4	
Slaking Conveyor # 9	Heat Resistant	24"W X 20'L	5	1	
Slaking Conveyor # 10	Heat Resistant	24"W X 30'L	10	1	
Slaking Conveyor # 11	Heat Resistant	24"W X 20'L	5	1	
Slaking Conveyor # 12	Local Ordinary	24"W X 20'L	5	1	
Slaking Ball Mill	Allis Chalmers	4" DIA X 8'L	100	1	
Classifier Pump	Warman	6" X 4"	60	3	
Limpe Pump	Warman	8" X 6"	450	3	
Tank Agitator			20	2	
Spillage Pumps	Galigher	4" DIA	40	2	
Cc Lime Tank Agitator			20	2	
Sub-Total			4,129		

DESCRIPTION	MANUFAC-TURER	SIZE	RATED HP	NO. OF UNITS (Existing)	For Procure-ment
11. AUXILIARIES					
Lighting:					
Primary Crushing			10		
Sec. Ter. Crushing			7		
Sp., Fob Aux. Ph, Ml Conv.			10		
Grinding Plant			6		
Flot/Filter Plant			7		
T/Thickener & Water Supply			6		
Lime Plant			10		
Met Lab (Including Lab. Equipt.)			25		
Offices			10		
Primary Crushing			100		
Sec. Ter. Crushing			140		
Sp, Fob Aux. Phl, Ml Conv.			190		
Grinding Plant			220		
Flot/Filter Plant			220		
T/Thickener & Water Supply			125		
Lime Plant			100		
Met Lab. (Including Lab. Equipt.			100		
Others			100		
SUB-TOTAL			1,386		
GRAND TOTAL (CONNECTED LOAD)			76,079 HP 56,755 KW		
(OPERATING LOADS 80% OF CONNECTED LOAD)			45,404 KW		

NOTE: * Available at DAS Underground, for installation at Carmen Underground crusher chamber.

** Stored at Warehouse (Location 13 & Shipping/ Receiving section) for installation.

2.6 Workforce Information

2.6.1 Total Operational Workforce

In a typical production year at 15.2 million metric tonnes, the mine forecast to employ 350 managerial staff and 2,402 rank and file or for a total of 2,752 personnel, broken down as follows:

Table No. 8: Final Mine Plant Manpower

CATEGORY	DIV. MNGR.	DEPT. MNGR.	SECT. MNGR.	UNIT MNGR.	R & F	TOTAL
Management / Administration						
Res. Manager & Sec.	1 (RM)				1	2
Comptroller	1		5	14	21	41
Security		1	5	22	175	203
Medical Director		4	6	2	34	46
QA/Sangi		1	1	4	51	57
Safety/Environmental		1	3	4	2	10
Personnel Administration		1	4	2	49	56
Purchasing Department		1	2		2	5
Internal Audit		1	2			3
Total	**2 (+RM)**	**10**	**28**	**48**	**335**	**423**

Carmen Underground						
Division Manager	1					1
U/G Production		1	8	46	756	811
U/G Development		1	3	25	292	321
U/G Services		1	6	29	270	306
U/G Engineering		1	4	9	32	46
Logistics & Supply			1	4	54	59
Total	**1**	**4**	**22**	**113**	**1404**	**1544**
Surface Mines Group						
Group Manager	1					1
Geology/Survey		1	4	7	32	57
Mineral Rights/Real Estate			2	5	6	
Heavy Equipment/Transport		1	5	17	144	232
Open Pit Operations			1	10	54	
Total	**1**	**2**	**12**	**39**	**236**	**290**
Carmen Concentrator						
Division Manager	1					1
Carcon Tech Services			1		24	25
Carcon Elec. Services		1	7		17	25
Carcon Operations		1	17	31	301	350
Tailings & Water		1	7		77	85
Metallurgical Lab.			1		8	9
Total	**1**	**3**	**33**	**31**	**427**	**495**
TOTAL ALL AREAS	**5 (+RM)**	**19**	**95**	**231**	**2,402**	**2,752**

Total Managerial	350
Total Rank & File	2402
Total Personnel	**2,752**

2.6.2 Staff Organizational Setup

The mine management structure has been organized with the objective of minimizing layers of management to facilitate communications and maintain flexibility. Beyond the Resident Manager, and Divisional Manager levels, the overall management structure consists of the following levels: Department Managers, Section Managers, and Unit (front line) Managers. Each level has been designed to generally have between four to eight supervisors reporting to the next higher management level.

The overall control of operations is broken down into ten (10) functional areas. These groups are Underground Mining, Ore Processing, Personnel (HRM) and Administration, Geology and Surface Maintenance and Services Group, Finance (Comptroller), Safety and Environment, Purchasing, Sangi Port & Quality Assurance, Medical Facilities and Security.

The Underground Mining, Ore Processing, Surface Mines, Finance and Human Resource areas headed by Divisional Managers who report directly to the Resident Manager. Departmental Managers who in some cases report directly to the Resident Manager head the other functional areas. Reporting to these functional area managers are department heads and/or superintendents. An Organization Chart by Division Management Areas is shown in **Annex No. 5.**

Once development and operations resume, each Divisional Manager will have both the authority and responsibility to maintain and support the business plan by active participation and direction in the planning and budgeting for his respective area.

2.6.3. Housing Options

Managers, including the Resident Manager, will reside on site in the existing housing facilities to the greatest extent possible. In practical terms, management staff will then be immediately available to respond to any situation that requires their attention on a 24-hour basis.

2.7 Development Program

2.7.1. State of Development

2.7.1.1 Exploration Works

The earliest record of base metal mining in the Atlas-Cebu mineral district was in the late 1930's by the Japanese who drove tunnels following gold-rich complex copper sulfide veins. After World War II, a conglomerate of American and Filipino miners had barely started to develop the property when Atlas took over in 1953. Thus began a more extensive exploration and development program of the Lutopan orebody using an initial cut-off grade of 0.70% copper. The DAS Concentrator with a daily capacity of 3,600 metric tons started producing copper concentrates in 1955.

In the 1960's, Newmont Mining conducted exploration work within the immediate vicinities of the Atlas mineralized block and subsequently delineated a stringer of ore pods, which subsequently became the 400-million tons Biga orebody (resource) after cut-off grade was lowered to 0.30% copper.

A third property, the Carmen orebody, which was discovered in 1974, and subsequent drilling confirmed a resource of more than 400-million metric tons (MMT).

Prior to its shutdown in 1994, Atlas had mined a total of 667.4 MMT of ore and produced over 5.6 billion pounds of copper. The Toledo Copper Mine at present still has a total geologic resource of some 873.8 MMT of ore at 0.41% copper value with a cut-off grade of 0.30% Cu from its Lutopan, Biga and Carmen orebodies. These resources were calculated using the Inverse Distance Squared-Anisotropic (IDSA) method, which utilizes geostatistics through variograms.

The Atlas-Cebu copper area is considered a highly mineralized district with still numerous potential zones at its vicinities waiting for future exploration.

2.7.1.2 Development/Operation

The Carmen Underground Lift 1 (CUG-1) was shut down in February 1994 due to a major muckrush as a result of a strong typhoon, which caused the flooding of the mine. Prior to the closure, CUG-1 was producing 10,000 tonnes per day and for Year-1993, a total of 3,110,000 tonnes of ore was mined. The best annual production record from the Atlas underground mines at Toledo City was in 1988 achieving an average of 35,650 MTPD from DAS Lift 1 and 2 mines. The most productive month was August with an average production of 41,500 MTPD. This was accomplished when DAS Lift 1 was producing 40% of the underground production while it was being phased out.

The proposed rehabilitation plan is to re-open the Carmen Lift 1 underground mine by dewatering the flooded workings, cleaning and restoring the openings, and rehabilitating equipment and appurtenant installations. During the rehabilitation period, which will take 25 months, ore production activity is restricted to handling of clean-up and development muck which will be transported to the surface via the hoisting facilities of DAS Lift 1 main shaft and DAS Lift 2 service shaft. After the rehabilitation, the decline and overland conveying systems will have been in place and sufficient production blocks have been developed. Production will start at 1,000 MTPD and gradually increase to 42,000 MTPD in the early part of Year-4 at which time shaft hoisting will have been completely replaced by the new decline conveyor system.

2.8 Description of planned activities

Rehabilitation works of the Carmen UG Lift-1 will continue during this period until its completion when the planned production capacity of 42.000 MTPD shall have been attained. The detail of mine rehabilitation works is discussed separately in the "Rehabilitation, Development and Construction Work Program".

2.8.1 Mine Development

2.8.1.1 Primary Development

The following parameters are used to formulate the primary development plans.

a) The horizontal development within the undercut level will be undertaken with Jackleg Rockdrill machines for drilling, and 2-cubic yard capacity LHDs for clean-up. Each loader will be allocated three (3) headings to maintain. The programmed advance rate for the undercut is three (3) meters per heading or a total of nine (9) meters per day for the three headings.

b) All grizzly panel drifts on the Grizzly Level will be excavated using a single-boom rubber-tired Jumbo unit for drilling and 3-cubic yard capacity LHD for cleaning. Each loader will service three (3) headings. The average advance rate per day per heading is

four (4) meters or a total of twelve (12) meters per rig for the three headings.

c) All primary horizontal development within the haulage level will be mined using a trackbound single-boom Jumbo for drilling, and RS 85 loader, locomotive and mine cars for the clean up. Each Jumbo rig will have three (3) headings at the footwall side. The average advance per heading programmed for this area is three (3) meters per day or a total advance of nine (9) meters per day per drill rig for the three (3) headings.

d) At the hanging-wall, only two (2) headings will be allocated per track-bound single-boom drill rig due primarily to the long tramming distance and the downgrade direction of the haulage. Two (2) rounds are scheduled for each rig per day. The scheduled advance rate per day is three (3) meters or a total of six (6) meters per day for two headings.

As shown in **Table No. 9,** approximately 6,827 meters of development will be advanced during the 25-month rehabilitation period. These include the decline, access tunnel, crusher chambers, ore passes, south intake ventilation drift, return haulage loop, and the grizzly and haulage panel drifts.

Thereafter, a total of 12,591 meters of primary development will be undertaken over eight (8) years at an average rate of 1,574 meters per year. This work will cover mainly the grizzly and haulage panel drifts development as shown in **Annex No. 6** and **Annex No. 7.**

Various support systems will be utilized at the haulage level. Depending on the condition of the rock, 6-inch by 8-inch timber frames, W8 x 20 steel frames or rock bolts (1.8 to 2.13 m. long) will be used for support. In very incompetent grounds, shotcreting, 50 mm. to 100 mm. thick, will be applied with rockbolt.

2.8.1.2 Block Development

The following parameters were used in the preparation of the block development plans:

a) 318 meters of transfer raises, equivalent to three (3) lines, will be developed per month. Each two-man crew will advance 1.5 meters per shift (0.75m/ms).

b) Six (6) loading stations are scheduled for development per month. Each three-man crew will complete one station per month.

c) 168 meters of grizzly drift will be developed per month, equivalent to three (3) lines. The advance rate assumed for the grizzly drift development is 1.5 meters per round, four (4) rounds per day for 2 crews of 3 men per crew.

d) 48 draw raises (366 meters) will be developed per month covering an area of six (6) lines. The mining rate assumed for the draw raise is one meter per man-shift.

e) 24 raise tops will be excavated per month. A two-man crew will develop four (4) raise tops per month.

At the end of the rehabilitation period, approximately 12,385 meters of development, 3,030 meters of concreting, 83 loading stations, 79 chute installations and 18,786 square meters of undercutting (equivalent to 20 grizzly lines) shall have been undertaken. See **Table No. 10**.

Following the 25-month development period, a yearly average of 10,770 meters of development, 2,181 meters of concreting, 25,994 sq. m. of undercutting, 254 raise-tops, 63 loading stations and 62 chute installations are projected. See **Annex No. 8** and **Annex No. 9**

Due to the weight of overlying cave materials, grizzly drifts will be rockbolted or supported with steel sets and concreted with 0.45 meter thick Class AA concrete with compressive strength of at least 3000 psi.

3.0 PRODUCTION

Ore Extraction

3.1.1 South Carmen Pit

3.1.1.1 Production Schedule

Operational Concepts

Atlas' overall mining program calls for ore production from block caving mining of Carmen Underground Lift-1 and from open pit mining of South Carmen Pit. The mine production from the open pit is planned to supply ore to the mill for the first five months of milling operation. After the exhaustion of South Carmen Pit ore, mine production will focus on Carmen Underground Lift-1.

South Carmen Pit is therefore programmed to deliver ore from Month-13 to Month-33 starting 10,000 MTPD for the first three months and deliver a maximum production of 15,000 MTPD by month-16 using the available open pit mining equipment. Heavy and auxiliary equipment not readily available shall be rented from outside contractors. Carmen Underground Lift-1 will start delivering ore to the mill in month-17 initially at a minimal production rate and gradually increase to 42,000 MTPD in month-38.

Waste stripping will start on Month-7 up to Month-12 at a rate of 38,000 TPD and will involve a total waste material of 6.480 million metric tons. The waste material stripped shall be hauled out to the nearby Lutopan subsidence area. The projected final South Carmen Pit configuration after mining and the total materials moved per bench (B+465 to B+165) is shown in **ANNEX No. 10**.

A map showing the Carmen mining areas (south Carmen Pit and Carmen Underground Lift-1) in relation to the Carmen Concentrator (CARCON) is presented in **ANNEX No. 11**.

Mining Program

The first six months of the open pit mining program will focus on the rehabilitation and procurement of mining equipment. A total of 9.002 million metric tons of ore with an average grade of 0.31% copper and 18.744 million metric tons of waste will be mined from South Carmen Pit for a period of 27 months (Months-7 to 33) at a waste to ore ratio (W:O) of 2.8:1. The proposed open pit-mining program is shown in Table No.11, which is also presented in Bar Chart marked **ANNEX No. 12**.

Table No. 11. Proposed Open Pit Mining Program

MONTH	MATERIAL MINED (MTPD)			REMARKS
	Ore	Waste	Total	
1-3	0	0	0	Mobilization/Materials procurement
4-6	0	0	0	Equipment Rehab/Erection
7-12	0	38,000	38,000	Waste stripping (B+465-B+375)
13-15	10,000	28,000	38,000	Minimal ore exposure. Ore to Stockpile
16-22	15,000	21,000	36,000	Full ore production/Start of mill operation.
23	15,000	20,800	35,800	Full ore production
24	15,000	20,000	35,000	Full ore production
25-31	15,000	15,000	30,000	Full ore production
32-33	15,000	10,000	15,000	Full ore production

Details of the South Carmen Pit Mining Program and metal production estimates are shown in **ANNEX No. 13**.

Waste Stripping

Waste Stripping activity will start on Month-7 after completion of the rehabilitation of heavy transport equipment. Waste stripping will go on for six months (month-7 to Month-12) at a rate of 38,000 MTPD) starting at B+375 to expose the minable ore at B+360. Waste mining attendant to ore mining will be at a rate of 28,000 MTPD from Month-13 to Month-15; 21,000 MTPD from month-16 to month-22 and will gradually decrease to 10,000 on the later part of pit operation.

Ore Production

South Carmen Pit will initially mine ore at a rate 10,000 MTPD by Month-13 until Month-15. Mined ore will be stockpiled in an area located near Carmen Concentrator's CARCON Primary Crusher because CARCON will start milling operation in Month-16 yet, in time with the availability of the tailings disposal facility. Open pit production will increase to 15,000 MTPD by month-16 and will be maintained until Month-33. All of the ore mined from South Carmen Pit will be milled at Carmen Concentrator (CARCON).

Mining Areas

The active benches covered by the South Carmen Pit mining program will be from B+465 down to B+165 located at the south hanging wall side of Greater Carmen Pit involving 21 benches covering an area of 25.20 hectares.

Waste Dumps

Most of the waste that will be moved from the upper benches of South Carmen Pit will be dumped at the nearby Lutopan subsidence area. As mining progresses to lower benches, the waste material moved will be brought to the main waste dump at Lutopan Subsidence area. Waste from B+2110 and B+165 will be hauled to +300 Dump at Carmen Underground Subsidence area located at the northern part of Carmen Pit. Other waste material movement (ie. Ramp construction) will be sidecasted on the crest side.

3.1.1.2 Manpower Requirement

The Surface Mines Group (Open Pit) includes two major departments: the Heavy Equipment/Transport Department and the Geology/Survey/Mineral Rights/Real Estate Department. Services from this group are supplied to all mine departments as well as to the Atlas community as a whole.

The manpower requirement for the Surface Mines Group with Mining Open Pit operations, Surface Maintenance and Services is summarized in Table No. 12 below.

Table No. 12. Manpower Requirement, Surface Mines Group With Open Pit Operations

	Group Mngr.	Dept. Mngr.	Section Mngr.	Unit Mngr.	R & F	Total
Manager	1	-	-	-	-	1
H.E./Transport Mine Open Pit Opn.	-	1	5 1	17 10	144 54	166 66
Geology/Survey/ Mineral Rights/Real Estate	-	1	6	12	38	57
Total	1	2	12	39	236	290

The Surface Mines Organizational Chart is shown in **ANNEX No. 14.**

3.1.2 Carmen UG Lift-1

Ore from the caving blocks is drawn manually by the grizzly men and induced to flow from the undercut level via the draw raise until the transfer raise below is filled.

Ore fragmentation at Carmen underground, as evidenced by the initial producing blocks, is coarse. In the plan, extraction efficiency is set at 150 tonnes per grizzly man-shift as compared to the more than 200 tons accomplished in DAS Lifts 1 and 2.

The basic requirement of a block-caving method is strict adherence to even and controlled draw rate so as to minimize ground pressure on the extraction openings, and waste dilution.

At panels 7 and 8 of Carmen Lift 1, 21 grizzly lines have been undercut. It is planned to seal 12 lines to isolate the areas where the liquefied stuffs from the "muckrush" have gained access underground. The other nine (9) lines, when activated, will be drawn at a slower rate of 15 to 20 centimeters per day to prevent further incursion of muckrush materials. Newly developed production lines will be drawn at an average rate of 25 centimeters per day from the start to 30% extraction level. When the extraction level exceeds 30%, draw rate will be increased to 38 centimeters per day.

The draw rates to be adopted for the Carmen underground mine are shown in Table No. 13 below.

Table No. 13. Recommended Drawpoint Draw Rates

Type of Production Line	Maximum Draw Rate (cm/day)	Tonnes per Day Per Drawpoint
Old	20	28
New: 0-30% Draw	25	35
New: >30% Draw	38	53

The drawpoint sampling procedure to be practiced at Carmen underground mine is as follows:

a) Sampling is to be made only during the first shift;
b) Two samples are to be obtained from the fresh muck;
c) Three unbiased samples are to be taken from a draw point suspected of dilution; and
d) Regular sampling is to be taken at the intervals shown in Table No.14.

Table No. 14. Recommended Sampling Intervals

% Extraction	Number of Draws Per Sample	Interval (meters)	Equivalent Tonnes
0-75%	19	6	800
76-80%	3	1	120
81-100%	2	0.5	80
Above 100%	1	0.3	41

3.1.2.1 Ore Hauling

Ore hauling of the projected 42,000 tonnes per day requires a rolling stock of 15 trains to operate three (3) shifts per day. This train fleet size was determined based on the following assumptions:

a) A train cycle time of one per hour, based on the actual time-and-motion study carried-out for the Carmen underground mine in October 1992;
b) Twelve cars allocated per train;
c) A car load capacity of 12.75 tonnes;
d) A six-hour shift utilization (75%); and
e) Three scheduled shifts per day.

The estimated labor strength to crew the haulage operation is 176 men to compose of locomotive drivers, car loaders/blasters, ore pass tenders, haulage cleaners, train dispatchers and the utility crew.

3.1.2.2 Production Schedule

The following parameters form the basis for the preparation of Carmen mine's underground production plan:

a) A production rate of 42,000 MTPD;
b) The milling and mining operations scheduled for 362 days per year (allowing for 3 days of preventive maintenance work);
c) The rates of draw is outlined in **Table No. 11**;
d) 95% availability of the draw points allowing for various support and other grizzly maintenance work to take place;
e) A material specific gravity of 2.70 metric tons per cubic meter,
f) A conservative grade factor of 0.95 based on historical data from 19 years of DAS Lift 1 block caving operations (refer to **Table No. 15** and **Annex No. 15**):
g) A reserve recovery forecast of 100%; and
h) A cut-off grade of 0.30% copper.

The homogeneity of grade distribution throughout the orebody, the reduction of waste overburden following the open pit mining operation, the geometry, and the operating conditions of the DAS Lift 1 orebody have strong similarities with Carmen's Lift 1 ore blocks. At 97.7% extraction from DAS Lift 1 orebody, the metal extraction achieved was 94.6%. For this reason, an empirical grade correction factor of 0.95 has been introduced in the Carmen orebody's grade forecasts.

Shown in **Table No. 16** is the summary of production forecast from the Carmen Underground Lift-1 orebody covering a period of more than 10 years. This program dictates that copper ore production at a rate of 1,000 MTPD will start in Month 5 of the second year to consist purely of development ore. The ore tonnage from development will increase to 5,000 MTPD in Month 10 of Year-2 as more areas are being developed. Once the decline and overland conveyors are commissioned, underground ore deliveries will start at 12,100 MTPD on the second month of Year-3 and gradually increases until it reaches its production peak of 42,000 MTPD in Month 2 of Year-4, when the 84 lines are fully developed at panels 7, 8, 9, 10, 11 and 12. The undercutting schedule is shown in **ANNEX No. 16**.

3.1.2.3 Manpower Requirements

The Underground Mining organization will be headed by a Group Manager. Responsible to the Group Manager will be four Department Managers of development, production, underground services and underground engineering. The divisional organization chart is shown in **ANNEX No. 17.**

Once the mine is brought to its full production capacity, approximately 1,544 men will be required as summarized and broken down below in **Table No. 17**. This manning level will be built up through the rehabilitation phase as shown in the manning schedule outlined in **Table No. 18.**

Table No. 17: Summary of Underground Mining Labor Requirements

Department	Number of Personnel
Group Manager	1
Mine Production and Development	1,132
Mine Engineering	46
Underground Services	306
Mine Logistics, Mine Administration and Supply	59
Total	**1,544**

4.0 COMMUNITY DEVELOPMENT PROGRAMS

The thrust of economic and social development in the country today is heavily geared towards the alleviation of poverty that will eventually lead to the upliftment of depressed communities. This goal has not only become a responsibility of the government but also the commitment of private entities that believe they have a social obligation to fulfil and the necessary resources to cater to the needs of the rural folks.

Atlas, ever cognizant of this responsibility, had initiated as early as 1970 a comprehensive community development and socio-economic assistance program within the Barangay and rural communities under the area of influence of its mining operations. It created a separate Community Development department, the purpose of which was to establish and maintain good and harmonious relations with the community people within Atlas' scope of operation. This was effectively carried out through technical and financial assistance to rural groups in planning and implementing income-generating projects and activities.

After almost two decades of working for and with the rural people in a self-reliant approach, Atlas had accumulated vast experiences in the field of community development that will be important and essential in reinstalling some, if not all, of the more effective projects in the revived operation.

4.1 Previous Atlas Socio-Economic Projects

The previous Atlas Socio-Economic Projects have the following general components:

4.1.1 Malubog Area Development Projects, consisting of:

Malubog Farmers Cooperative
Farm Credit Assistance
Work Animal Loan
Tractor Services
Corn Mill
Swine Dispersal
Malubog Dam Fish Stocking
Barrio Hall Construction
Malubog Spring Development
Community Chapel and Barrio Schools
Farm Management Office and Warehouse
Integrated Barrio Health Plan
Fish Farming
Vegetable Raising

Rope Making
Kasoy Chapel
Malubog Skills Training

4.1.2 Poog Socio-Economic Project

Cattle Fattening
Shoe Making
Doormat and Flowerpot Making
Broiler Meat Production
Egg Laying Project
Swine Raising
Duck and Turkey Raising
Atlas Farmers Association

4.1.3 Don Andres Soriano (DAS) Cottage Industries

Furniture, Woodstripping and Firewood Projects
Tripod-Coupler Project
Rubber Component Project
Mini-Bake Shop
Loom Weaving
Glove Making
Paper Bag Making
Leatherette Bag Making
Upholstery

4.1.4 Atlas 4-H Clubs Association

4.1.5 Child Welfare (Day Care Centers) Program

Since these projects were intimately linked to Atlas and dependent upon it, particularly, for financial and technical supports and, more importantly, as consumer for their products, the prolonged suspension of the mining operations has had a fatal domino effect on the viability and sustainability of most of these projects. Except for the cooperatives, fish farms and a few of the self-supporting cottage industries like shoemaking, furniture making and poultry raising, the rest of the affected projects have now folded up or remained dormant.

4.2 Proposed Socio-Economic Projects–New Operations

Should Atlas resume its suspended operations, albeit on a scaled-down production level, it will adopt the same approach to the rural development issue as before. However, it will support only selected community development and livelihood projects that it finds to be viable, have a broad-based community acceptance, capable of being self-sustained, could supply the company material needs, and require a minimal post-mining maintenance on the part of the company.

5.0 ENVIRONMENTAL MANAGEMENT AND PROTECTION COST ESTIMATE

The estimated total cost of the subject Atlas Environmental Protection and Enhancement Program covering the projected life-of-the mine [12 years] cost is about PhP3.830 Billion.

The summary breakdown of the estimated EPEP cost of PhP1,817.387M for the three-year period is shown below:

EPEP COST ESTIMATES – 3 YEARS
(In Million PhP)

IMPACT CONTROL COMPONENT	YEAR			Total
	1	2	3	
1 Slope Stabilization & Erosion Control				
1.1 10% of Road/Drainage Mtce.	2.533	0.251	1.484	4.268
1.2 30% of Reforestation	0.256	0.221	0.664	1.141
1.3 10% of Carmen Drainage X-cut Dev.	1.532	0.078	0.000	1.610
1.4 10% of Tailings Disposal System	103.017	0.000	8.919	111.936
2 Reforestation/Revegetation				
2.1 50% of Reforestation	0.443	0.369	1.107	1.919
3 Drainage Improvement, River Rechanneling and Dredging				
3.1 80% of Drain Tunnel Mtce.	20.317	1.068	19.071	40.456
3.2 80% of Carmen UG Backfilling	0.000	0.000	0.000	0.000
3.3 50% of Road/Drainage Mtce.	12.665	1.256	7.418	21.339
3.4 50% of Carmen Drainage X-cut Dev.	7.662	0.391	0.000	8.053
4 Sedimentation Control & Silt Dam Const.				
4.1 10% of Road/Drainage Mtce.	2.533	0.521	1.484	4.538
4.2 60% of Tailings Disposal System	618.103	0.000	53.515	671.618
4.3 100% of Tailings Thickeners	195.373	52.239	1.944	249.556
4.4 20% of Carmen Drainage X-cut Dev.	3.065	0.156	0.000	3.221
5 Acid Mine Drainage Control				
5.1 30% of Tailings Disposal System	309.052	0.000	26.757	335.809
5.2 20% of Road/Drainage Mtce.	5.066	0.502	2.967	8.535
5.3 20% of Drain Tunnel Mtce.	5.079	0.267	4.768	10.114
6 Noise and Vibration Control				
6.1 20% of Ventilation & Dust Control	0.000	0.000	6.355	6.355
6.2 20% of Intake Vent. Shaft Dev.	0.000	13.674	5.422	19.096
6.3 20% of Exhaust Vent. Drift Dev.	0.000	1.491	0.000	1.491
6.4 20% of Crusher Vent. Raise Dev.	0.000	0.000	0.094	0.094
6.5 20% of Dust Collecting Chamber Dev.	0.000	0.000	0.048	0.048
7 Dust and Gas Emission Control				
7.1 80% of Vent & Dust Control	0.000	0.000	25.422	25.422
7.2 10% of Road/Drainage Mtce.	2.533	0.251	1.484	4.268
7.3 80% of Intake Vent. Shaft Dev.	0.000	54.696	21.688	76.384
7.4 80% of Exhaust Vent. Drift Dev.	0.000	5.962	0.000	5.962
7.5 80% of Crusher Vent. Raise Dev.	0.000	0.000	0.375	0.375
7.680% of Dust Collecting Chamber Dev.	0.000	0.000	0.191	0.191
7.780% of Carrnen Drainage X-cut Dev.	3.065	0.156	0.000	3.221
8 Safety and Accident Prevention				
8.1100% of Safety Budget	4.746	4.718	4.718	14.182
8.250% of Hospital Facilities	2.013	1.186	6.880	10.079
9 Aesthetic Enhancement				
9.120% of Carmen U Backfilling	0.000	0.000	0.000	0.000
9.220% of Recreational Facilities	0.169	0.000	0.144	0.313

9.3 100% of Camp Houses	80.985	1.302	5.317	87.604
9.4 20% of Reforestation	0.177	0.147	0.443	0.767
10 Socio-Economic Development. Assistance				
10.1 100% Domestic Water Supply	41.073	0.000	27.531	68.604
10.2 50% Hospital Facilities	2.013	1.186	6.680	9.879
10.3 50% Recreational Facilities	0.675	0.000	0.578	1.253
11 Environmental Monitoring				
11.1 100% Environmental Monitoring	0.664	0.661	0.661	1.986
11.2 100% Mine Waste Tailings Fee	0.000	0.000	0.100	0.100
11.3 100% Mines Rehab. Fund (MRF)	0.000	0.000	5.600	5.600
T O T A L (PhP)	1,424.809	142.749	249.829	1,817.387

6.0 SIGNATURE OF THE PERSON WHO PREPARED THE WORK PROGRAM

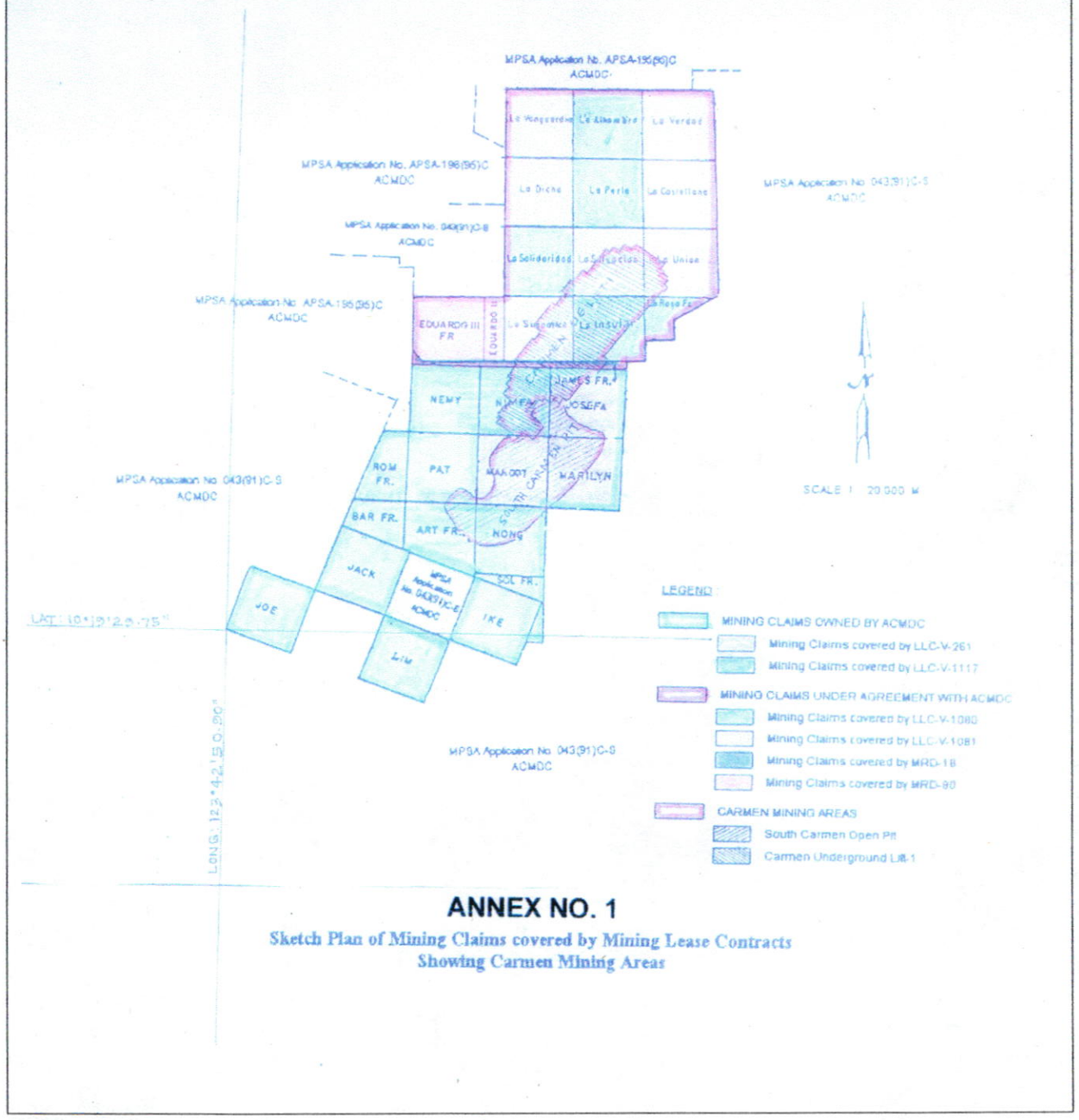
ATLAS CONSOLIDATED MINING AND DEVELOPMENT CORPORATION

By:

CONSTANTE P. BUMANGLAG
Mining Engineer
Reg. No. 502
PTR No. 0323055
Dated: February 1, 2005

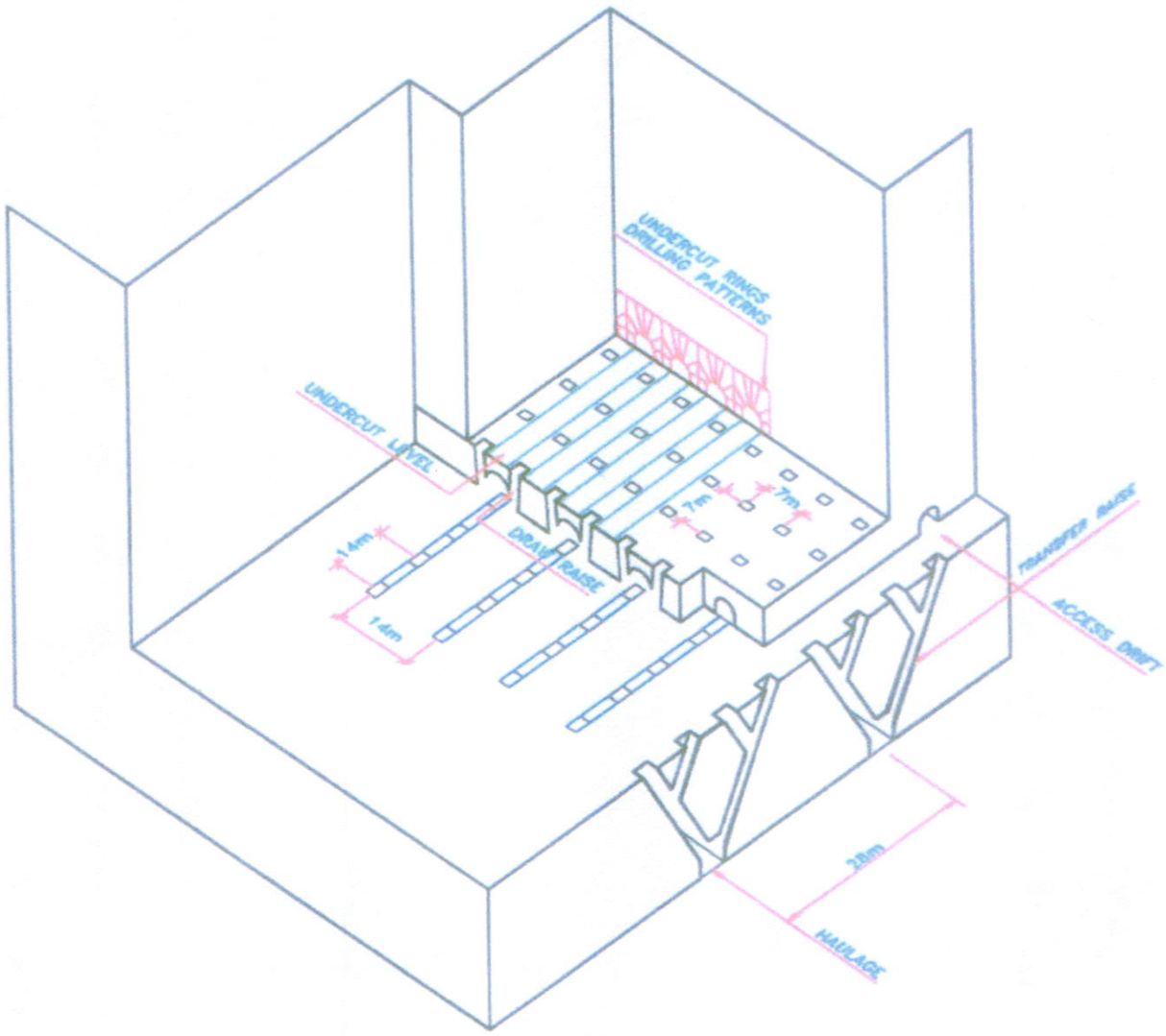
LIST OF ANNEXES

Three (3) Year Commercial Operation Work Program



ANNEX NO. 1

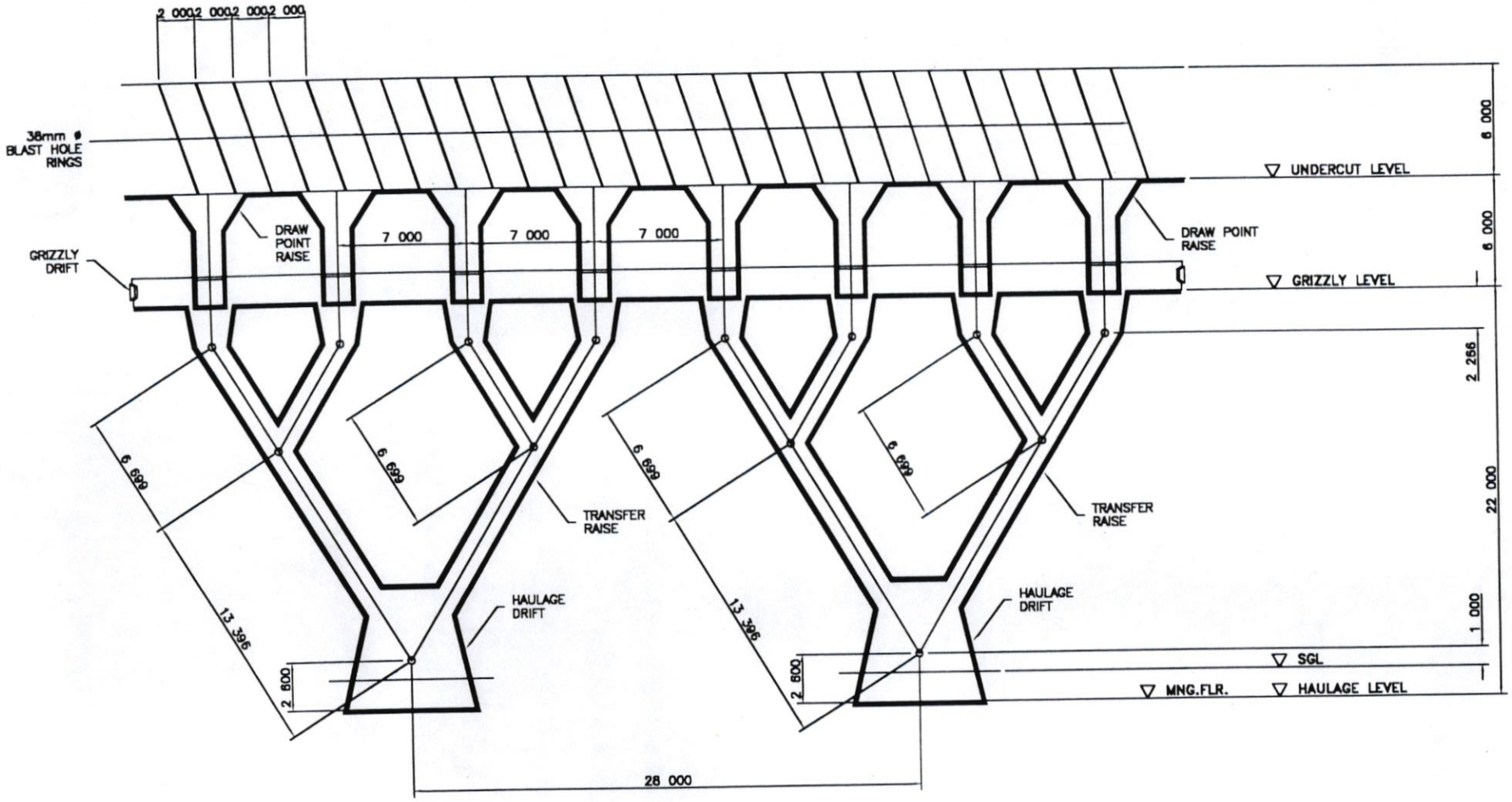
Sketch Plan of Mining Claims covered by Mining Lease Contracts
Showing Carmen Mining Areas



ANNEX NO. 2

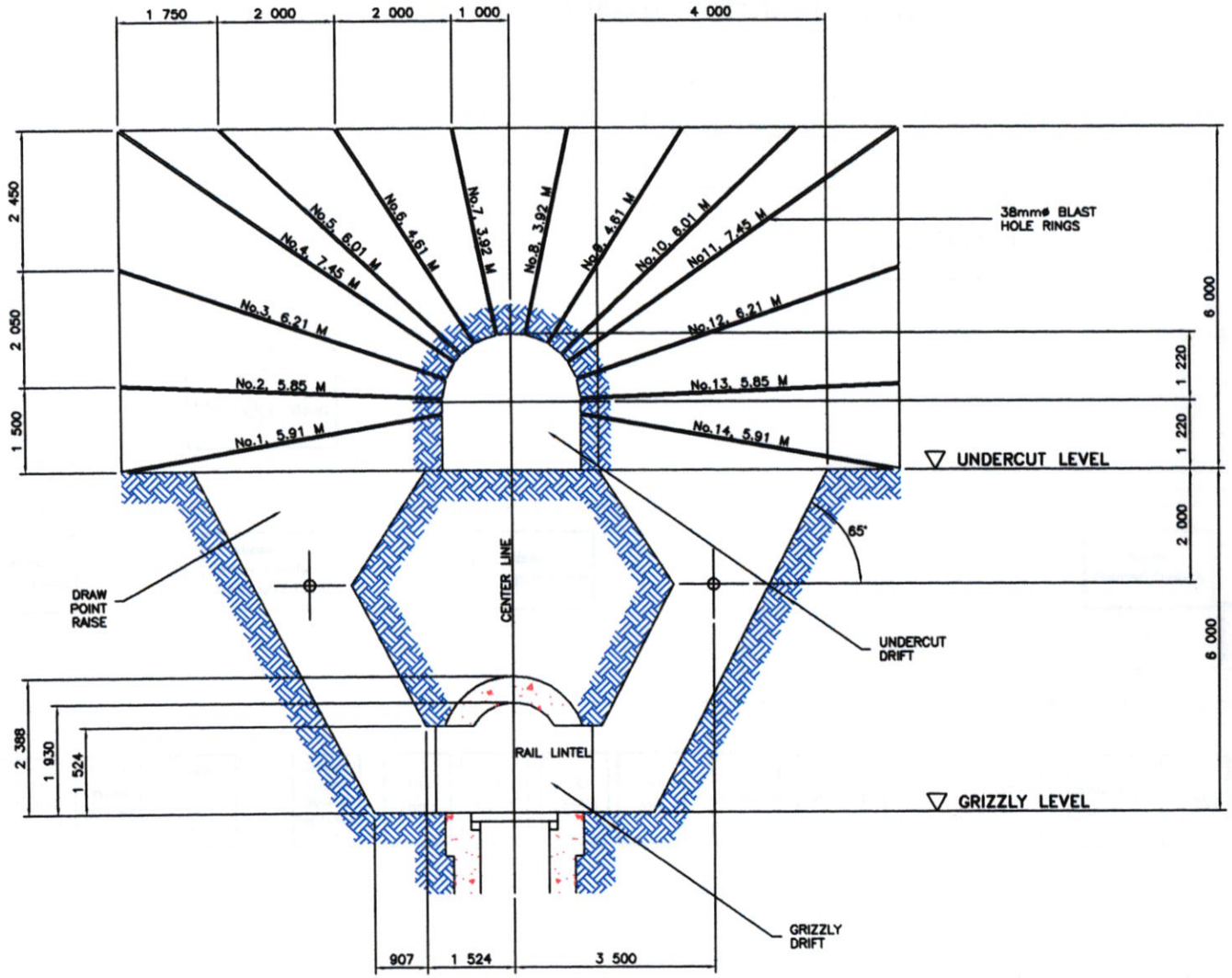
ISOMETRIC DIAGRAM OF CARMEN GRAVITY BLOCK CAVING

(NOT TO SCALE) (DIMENSIONS IN METERS)



ANNEX NO. 3 - TRANSFER RAISE, DRAW POINT RAISE & BLAST HOLE RING LAYOUT

(NOT TO SCALE) (DIMENSIONS IN METERS)



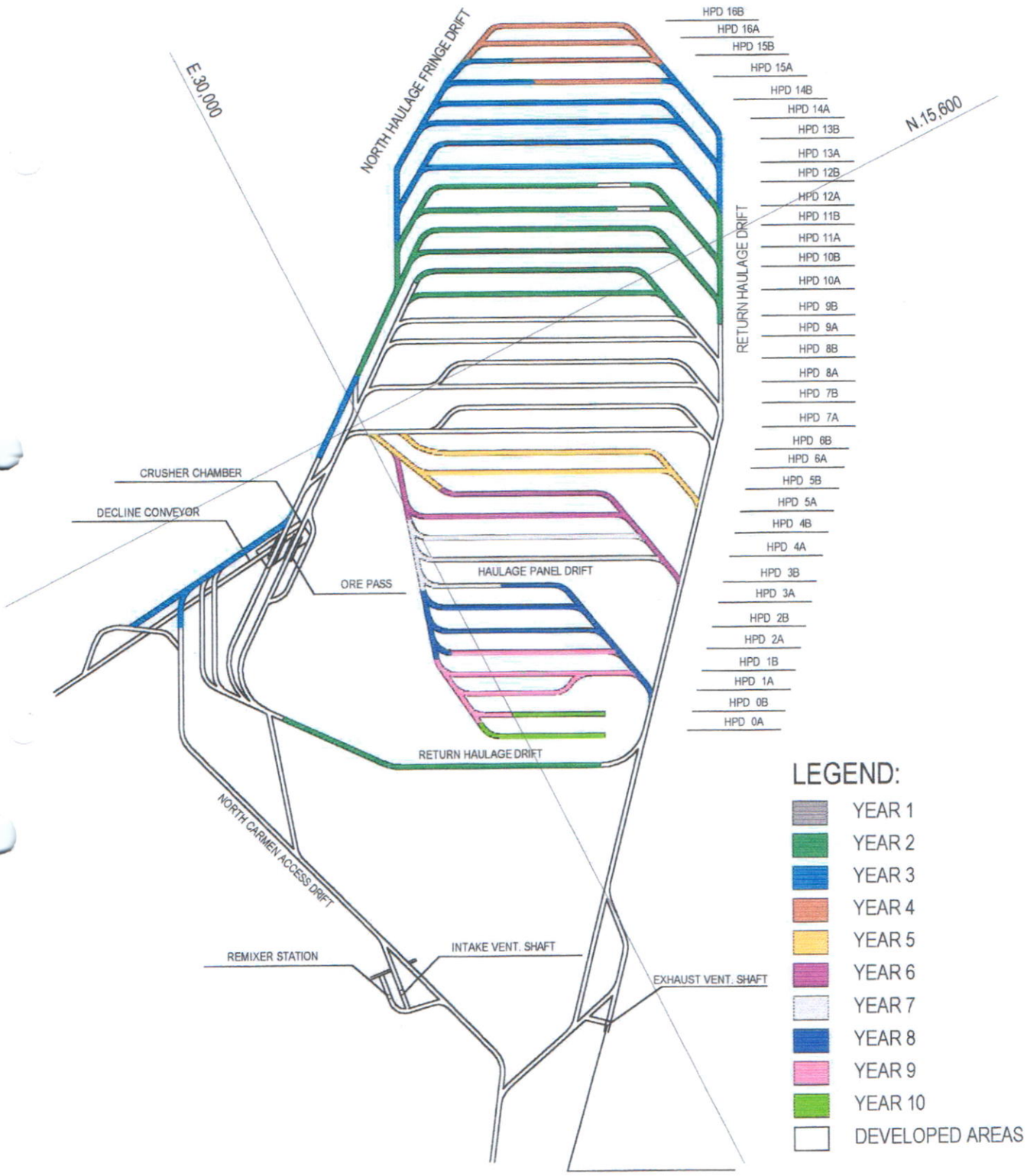
ANNEX NO. 4 UNDERCUT DRILLING PATTERN & DRAW POINT RAISE LAYOUT
(NOT TO SCALE) (DIMENSIONS IN METERS)

LEGEND:

- PILLAR BLOCKS
- YEAR 2
- YEAR 3
- YEAR 4
- YEAR 5
- YEAR 6
- YEAR 7
- YEAR 8
- YEAR 9
- YEAR 10
- DEVELOPED AREAS

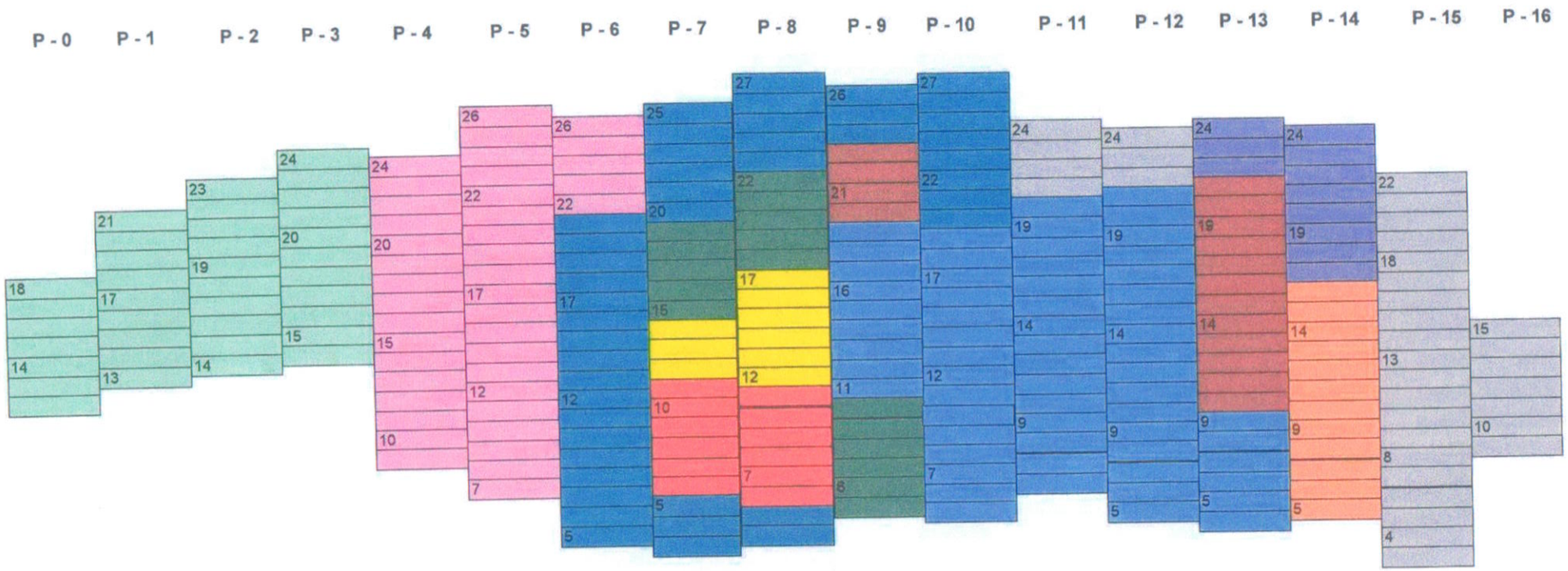
ANNEX NO. 6

CARMEN UNDERGROUND LIFT-1
GRIZZLY LEVEL DEVELOPMENT SCHEDULE
DIMENSION IN METERS (DRAWN NOT TO SCALE)



ANNEX NO. 7

CARMEN UNDERGROUND LIFT-1
HAULAGE LEVEL DEVELOPMENT SCHEDULE
(NOT TO SCALE)



LEGEND:

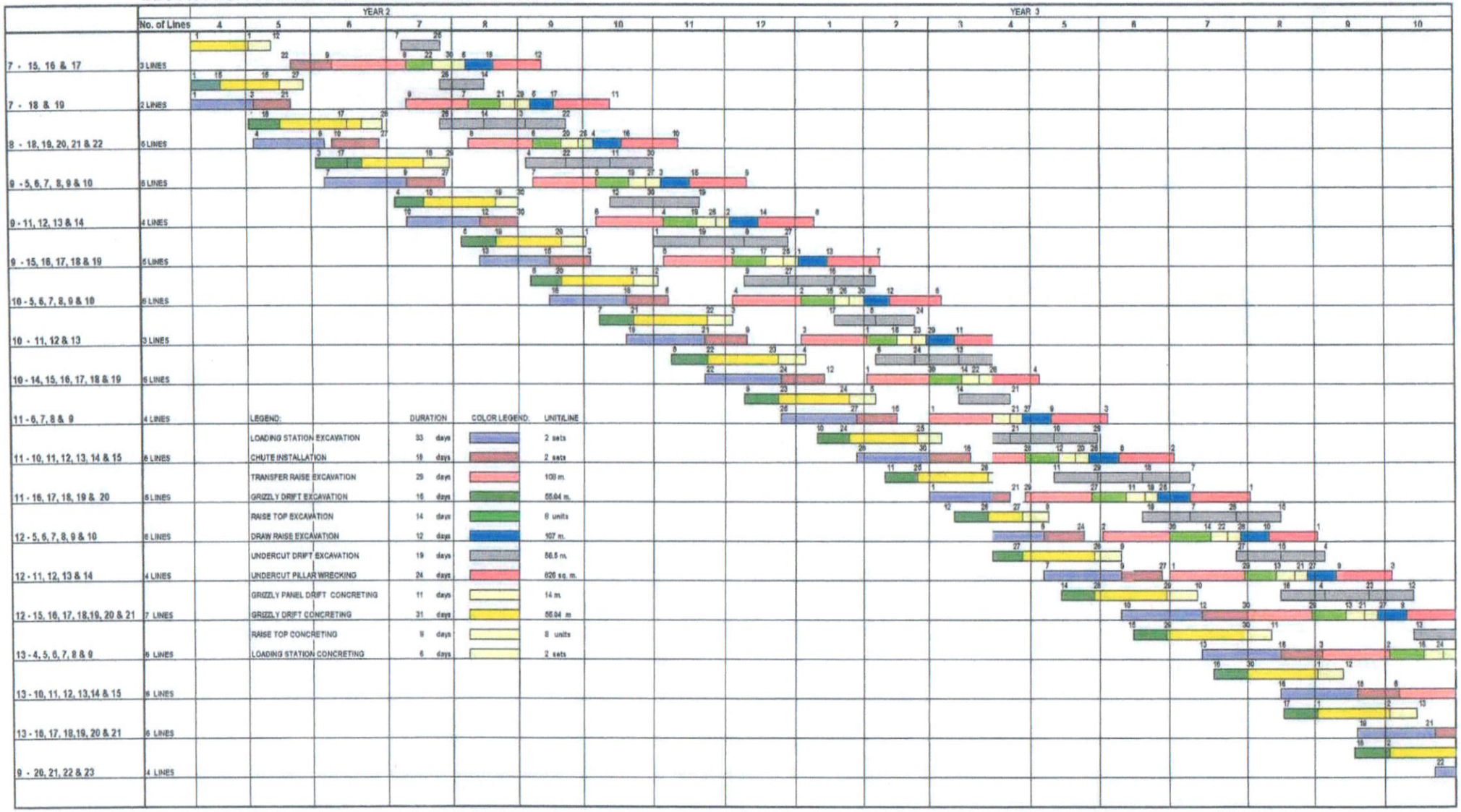
	ACTIVE BLOCKS	62	YEAR 3	34	YEAR 7	TOTAL UC	273
	SEALED BLOCKS	16	YEAR 4	44	YEAR 8		
	YEAR 1	12	YEAR 5	41	YEAR 9		
16	YEAR 2	11	YEAR 6	37	YEAR 10		

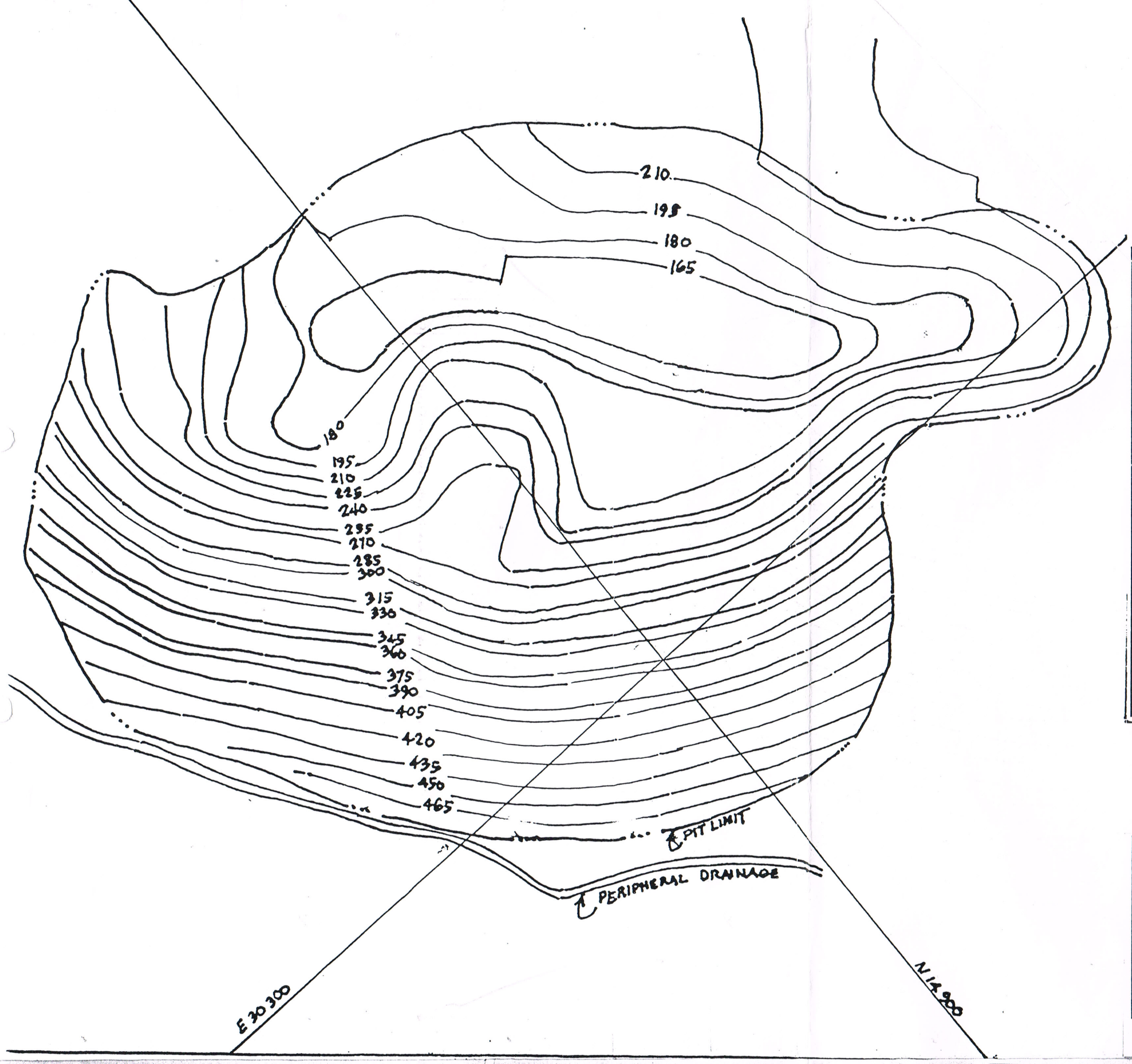
ANNEX NO. 8 - CARMEN UNDERGROUND LIFT 1 UNDERCUTTING PLAN

UNDERCUT LEVEL - (L - 27 M)

ANNEX NO. 9 - CARMEN UNDERGROUND LIFT ONE

BLOCK PREPARATION AND UNDERCUTTING SCHEDULE





SOUTH CARMEN PIT ORE RESERVE

BENCH	ORE	%cu	WASTE	TM
465			311,000	311,000
450			450,000	450,000
435			657,000	657,000
420			1,037,000	1,037,000
405			969,000	969,000
390			1,003,000	1,003,000
375			1,349,000	1,349,000
360	137,000	0.26	1,073,000	1,210,000
345	380,000	0.28	959,000	1,339,000
330	225,000	0.30	1,020,000	1,245,000
315	501,000	0.31	882,000	1,383,000
300	519,000	0.31	691,000	1,210,000
285	640,000	0.33	829,000	1,469,000
270	536,000	0.31	648,000	1,184,000
255	569,000	0.34	770,000	1,339,000
240	778,000	0.32	1,115,000	1,893,000
225	1,206,000	0.32	1,356,000	2,562,000
210	1,168,000	0.32	1,159,000	2,327,000
195	786,000	0.27	1,369,000	2,155,000
180	776,000	0.28	808,000	1,584,000
165	781,000	0.28	289,000	1,070,000
Total/Ave.	9,002,000	0.31	18,744,000	27,746,000
W:O RATIO = 2.08:1				

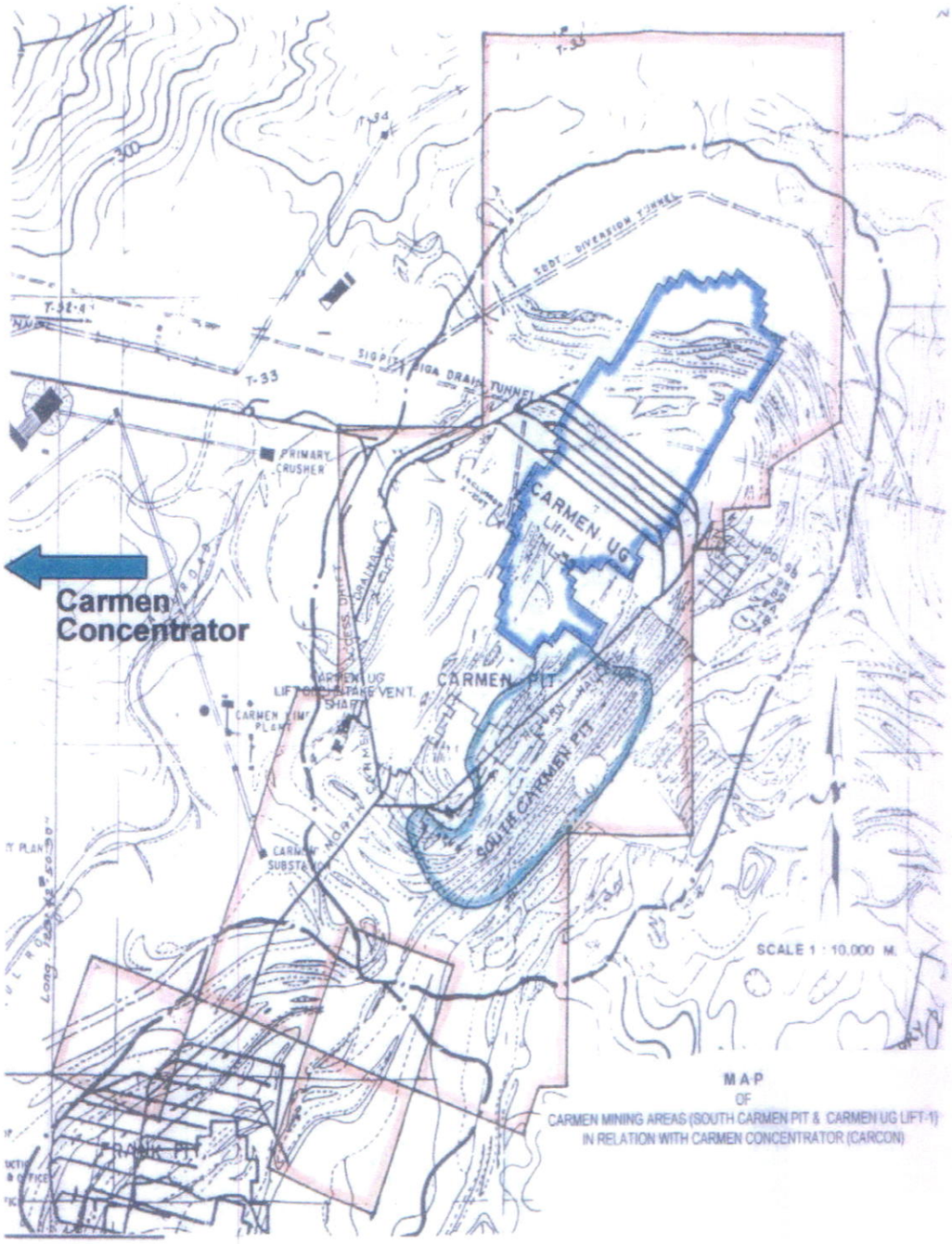
MASTER PLAN

SOUTH CARMEN PIT

Scale - 1:3000

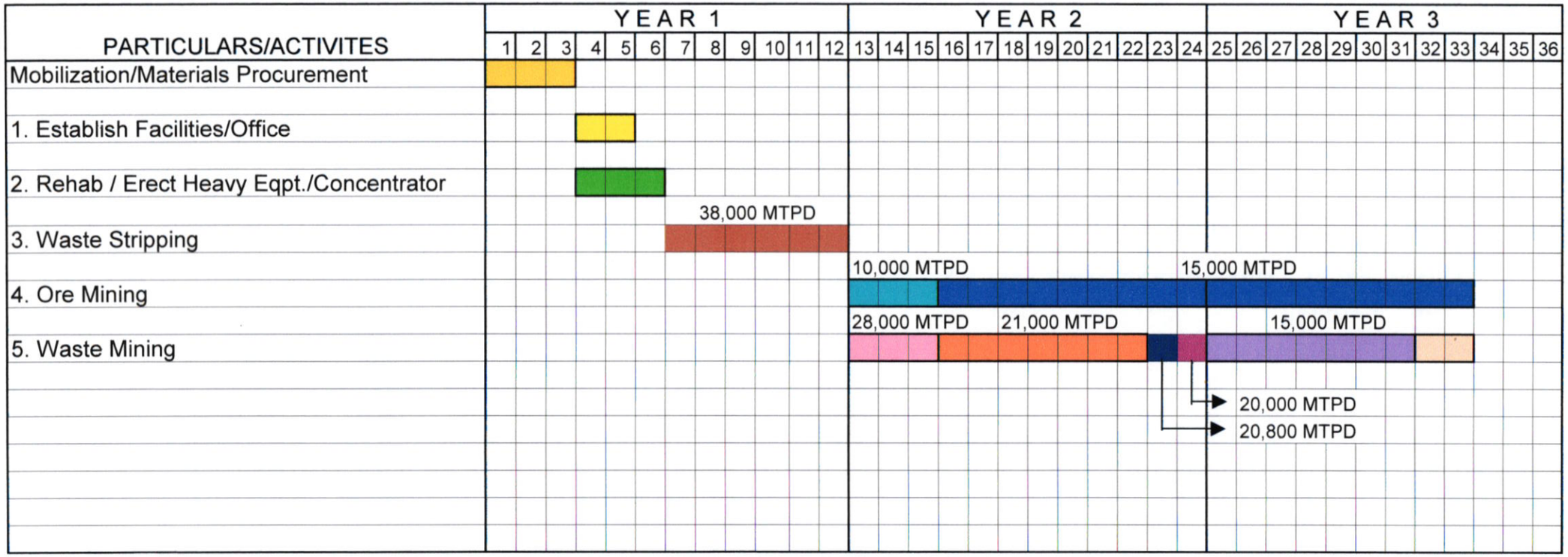
January 18, 2005

ANNEX NO. 10



ANNEX NO. 11 - Carmen Mining Areas (South Carmen Pit and Carmen UG Lift-1) in relation to Carmen Concentrator (CARCON)

ANNEX NO. 12 - TIMETABLE FOR 3-YEAR SOUTH CARMEN PIT MINING

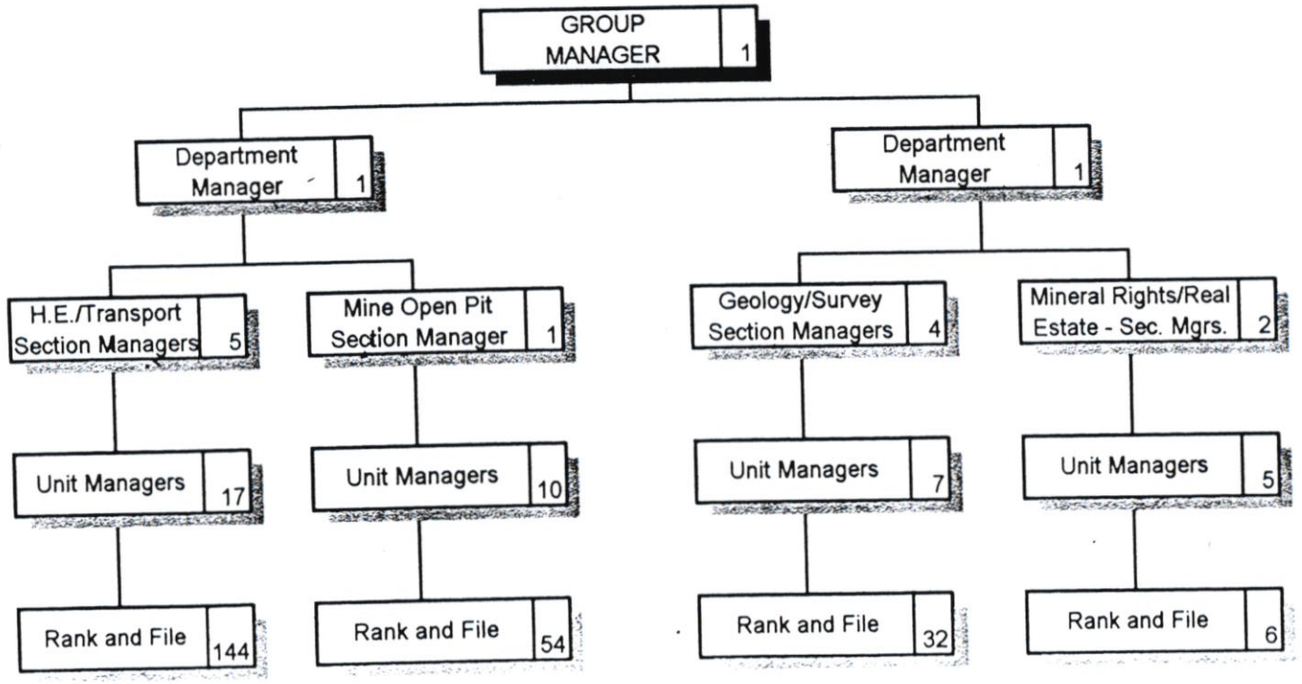


ANNEX NO. 13 - South Carmen Pit Mining Program and Production Estimates

								ESTIMATED METAL EXTRACTION			
	MONTH	MTPD	TOTAL	% Cu	gto Au	gto Ag	TAILS	LB Cu	Oz Au	Oz Ag	DMT PYRITE
Year 2											
	13 *	10,000	300,000	0.27	0.05	0.188	0.073	1,287,764	241	914	3,212
	14 *	10,000	300,000	0.28	0.06	0.234	0.073	1,353,133	288	1,094	3,212
	15 *	10,000	300,000	0.30	0.09	0.326	0.073	1,483,871	385	1,462	3,212
	16	15,000	450,000	0.31	0.10	0.365	0.073	2,323,859	652	2,428	4,818
	17	15,000	450,000	0.31	0.10	0.365	0.073	2,323,859	652	2,428	4,818
	18	15,000	450,000	0.32	0.11	0.418	0.073	2,421,912	724	2,750	4,818
	19	15,000	450,000	0.32	0.11	0.418	0.073	2,421,912	724	2,750	4,818
	20	15,000	450,000	0.31	0.10	0.365	0.073	2,323,859	652	2,428	4,818
	21	15,000	450,000	0.34	0.13	0.510	0.073	2,618,018	886	3,365	4,818
	22	15,000	450,000	0.31	0.10	0.365	0.073	2,323,859	652	2,428	4,818
	23	15,000	450,000	0.32	0.11	0.418	0.073	2,421,912	724	2,750	4,818
	24	15,000	450,000	0.32	0.11	0.418	0.073	2,421,912	724	2,750	4,818
	TOTAL/AVG.	13,750	4,950,000	0.31	0.10	0.376	0.073	25,725,871	7,301	27,548	52,994
Year 3	MONTH	MTPD	TOTAL	% Cu	gto Au	gto Ag	TAILS	LB Cu	Oz Au	Oz Ag	DMT PYRITE
	25	15,000	450,000	0.32	0.11	0.418	0.073	2,421,912	724	2,750	4,818
	26	15,000	450,000	0.32	0.11	0.418	0.073	2,421,912	724	2,750	4,818
	27	15,000	450,000	0.32	0.11	0.418	0.073	2,421,912	724	2,750	4,818
	28	15,000	450,000	0.30	0.09	0.326	0.073	2,225,806	577	2,194	4,818
	29	15,000	450,000	0.30	0.09	0.326	0.073	2,225,806	577	2,194	4,818
	30	15,000	450,000	0.30	0.09	0.326	0.073	2,225,806	577	2,194	4,818
	31	15,000	450,000	0.28	0.06	0.234	0.073	2,029,700	432	1,641	4,818
	32	15,000	450,000	0.28	0.06	0.234	0.073	2,029,700	432	1,641	4,818
	33	15,000	450,000	0.28	0.06	0.234	0.073	2,029,700	432	1,641	4,818
	34							0	0	0	0
	35							0	0	0	0
	36							0	0	0	0
	TOTAL/AVG.	15,000	4,050,000	0.30	0.09	0.326	0.073	20,032,253	5,200	19,754	43,359
	YEAR	MTPD	TOTAL	% Cu	gto Au	gto Ag	TAILS	LB Cu	Oz Au	Oz Ag	DMT PYRITE
	2	13,750	4,950,000	0.31	0.10	0.376	0.073	25,725,871	7,301	27,548	52,994
	3	15,000	4,050,000	0.30	0.09	0.326	0.073	20,032,253	5,200	19,754	43,359
	4										
	5							0	0	0	0
	6							0	0	0	0
	7							0	0	0	0
	8							0	0	0	0
	9							0	0	0	0
	10							0	0	0	0
	11							0	0	0	0
	12							0	0	0	0
	TOTAL/AVG.	14,286	9,000,000	0.31	0.09	0.354	0.073	45,758,124	12,500	47,302	96,353

* - Ore to Stockpile

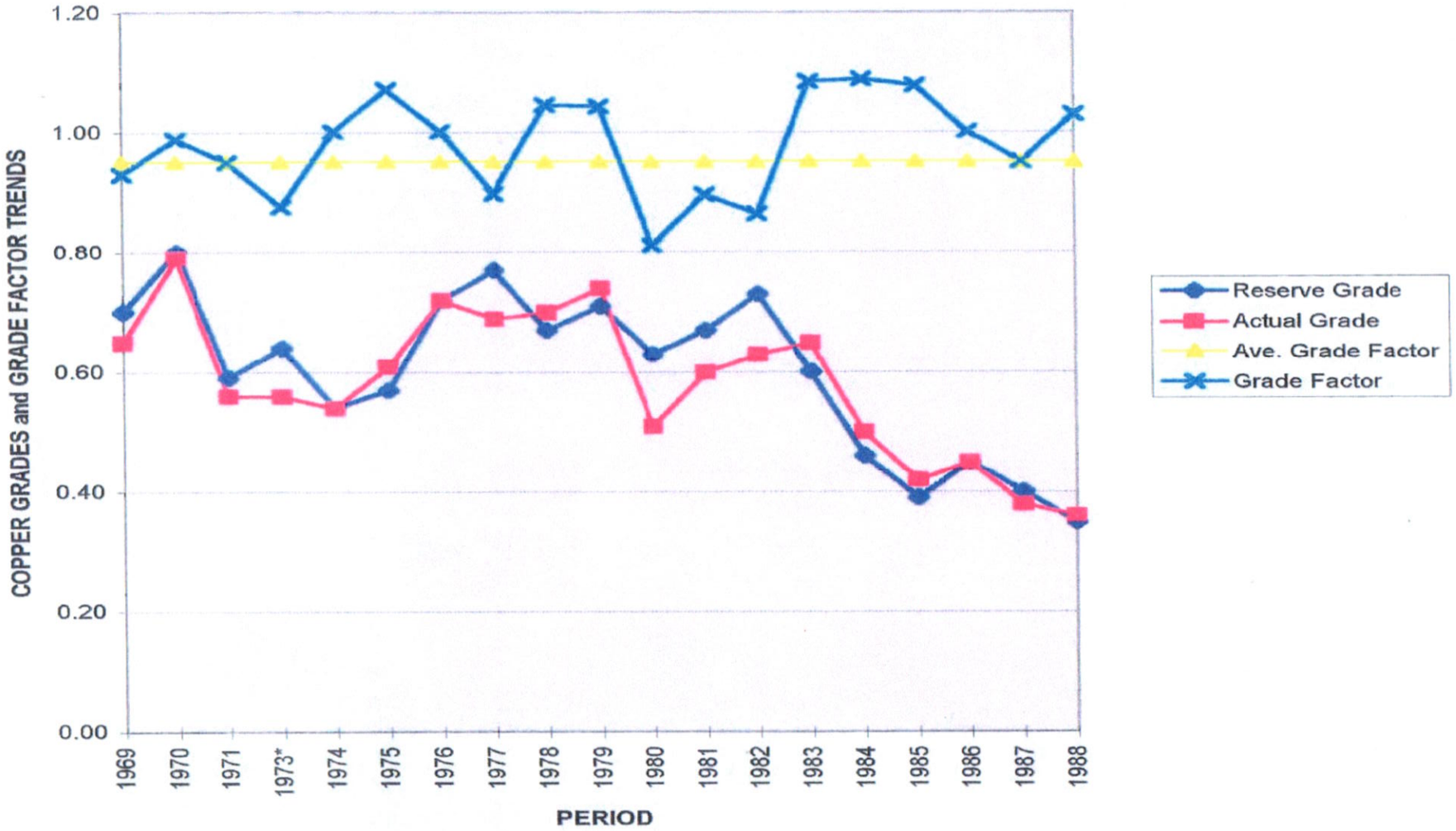
ANNEX NO. 14 – ORGANIZATIONAL CHART, SURFACE MINES GROUP (WITH MOP)

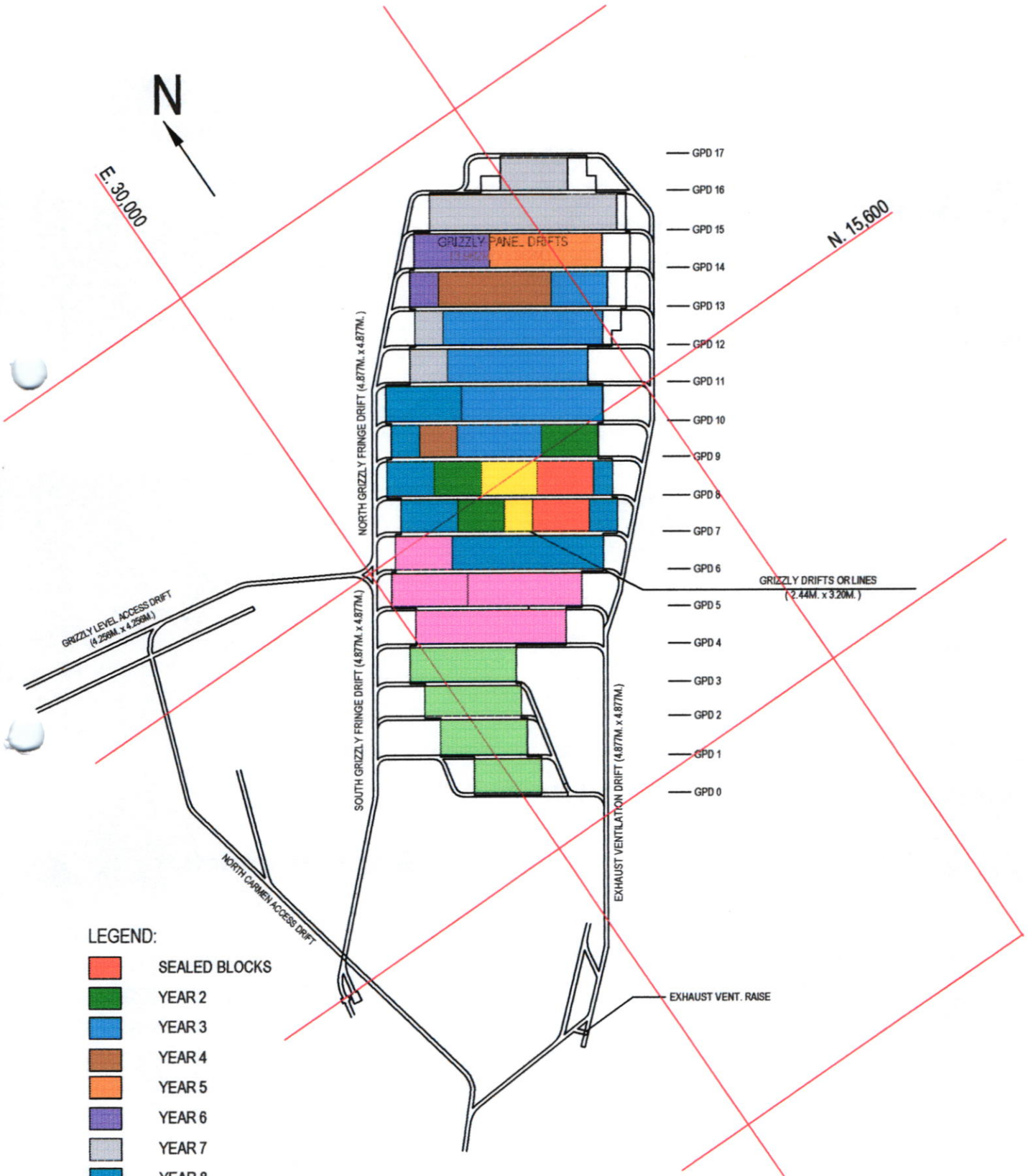


SUMMARY:

Group Manager	1
Dept. Managers	2
Sec. Managers	12
Unit Managers	39
Rank & File	236
TOTAL	290

ANNEX NO. 15 - RETROSPECTIVE GRADE ANALYSIS FOR DAS UNDERGROUND LIFTS 1 and 2





ANNEX NO. 16

CARMEN UNDERGROUND LIFT-1 UNDERCUTTING SCHEDULE

DIMENSION IN METERS (DRAWN NOT TO SCALE)

MINE UNDERGROUND TABLE OF ORGANIZATION FOR 42000 MTPD

MANPOWER

7/14/2004

GROUP MANAGER	1	SERVICES
DEPARTMENT MANAGER	3	1
SECTION MANAGER	16	6
UNIT MANAGER	84	29
RANK AND FILE	1134	270
TOTAL	1238	336
		1544

GROUP MANAGER
Mine Underground
1

DEPARTMENT MANAGER
UG Production
1

SECTION MANAGER
Production Hauling
3

SECTION MANAGER
Production Draw
3

SECTION MANAGER
Tracks
1

SECTION MANAGER
Repair
1

UNIT MANAGER
Hauling
9

UNIT MANAGER
Draw
21

UNIT MANAGER
Dispatching
3

UNIT MANAGER
Repair
6

UNIT MANAGER
Chutes
3

UNIT MANAGER
Tracks
4

HAULING
160

DRAW
400

DISPATCHING
4

REPAIR
60

CHUTES
72

TRACKS
60

DEPARTMENT MANAGER
UG Development
1

SECTION MANAGER
Concreting
1

SECTION MANAGER
Grizzly Level
1

SECTION MANAGER
Haulage Level
1

UNIT MANAGER
Concreting
6

UNIT MANAGER
Grizzly Level
3

UNIT MANAGER
Haulage Level Devt
3

UNIT MANAGER
SBDT
1

UNIT MANAGER
Ventilation
3

UNIT MANAGER
GD /RT
3

UNIT MANAGER
LS/TR EXC
3

UNIT MANAGER
DR /UC
3

CONCRETING
104

PRIMARY DEVT
12

HAULAGE LEVEL DEVELOPMENT
20

SBDT
8

VENTILATION
24

GD /RT
28

LS/TR EXC
44

DR /UC
52

DEPARTMENT MANAGER
UG Eng'g/D. Contl./Vent.
1

SECTION MANAGER
Draw Contrd
1

SECTION MANAGER
UG Planning
1

SECTION MANAGER
Admin/Logistics/ Supply
1

SECTION MANAGER
Ventilation Planning
1

UNIT MANAGER
Draw Contrd
3

UNIT MANAGER
UG Planning
3

UNIT MANAGER
Admin/Logistics/ Supply
4

UNIT MANAGER
Draw Sched /Subs.
1

UNIT MANAGER
Computer /Statistics
1

UNIT MANAGER
Ventilation Planning
1

CHECKERS
Draw / Pull
24

DRAFTSMAN
2

ADMIN/LOGISTICS/ SUPPLY
54

CLERK
1

CLERK
2

INSPECTOR
Subsidence
3

DEPARTMENT MANAGER
UG Services
1

SECTION MANAGER
Hoisting Electrical
1

SECTION MANAGER
Hoisting Mechanical
1

SECTION MANAGER
MUG Mechanical
1

SECTION MANAGER
S. Shop /FAC/Equip Svs
1

SECTION MANAGER
CUG Electrical
1

SECTION MANAGER
Adm. Planning & Log
1

UNIT MANAGER
Shift
3

UNIT MANAGER
Hoist /Pumps
4

UNIT MANAGER
MUG Mechanical
4

UNIT MANAGER
S.Shop Equipt Recon
4

UNIT MANAGER
UG Electrical
4

UNIT MANAGER
Adm. Planning & Log
3

UNIT MANAGER
Relief / PMS
1

UNIT MANAGER
Compressors
1

UNIT MANAGER
Decline/ SBDT
4

UNIT MANAGER
Batching Plant
1

ELECTRICIAN
SHIFT
8

HOIST OPERATOR
Shaftman/Banksman
33

MECHANICS
Loco/Cars/Pumps
33

SURF SHOP/ FACILITIES
EQUIPT /SERVICES
56

ELECTRICIAN
24

RANK & FILE
9

ELECTRICIAN
PMS
2

COMP OPERATOR
Maintenance /Tender
13

MECHANICS
LDH/Jumbo /R.Drill
14

RECONDITIONING UG
EQUIPMENT
29

TECHNICIAN
LABORATORY
1

B.PLANT OPERATOR
F. Lift/P.Loader /Relief
15

PUMP TENDERS
Maintenance
26

LUBESTA TENDER
PMS/Loco/Car
7

ANNEX NO. 17

LIST OF TABLES

Three (3) Year Commercial Operation Work Program

Table No. 9 - SUMMARY OF CARMEN UNDERGROUND LIFT 1 PRIMARY DEVELOPMENT PLAN

PARTICULARS	UNIT	CAPITALIZED						DEVELOPMENT TO SUSTAIN 42,000 TPD								
		YEAR 2	YEAR 3	TOTAL	YEAR 4		TOTAL		YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	TOTAL	YEARLY
		MO 4-12	MO. 1	MO 2 -12	MO. 1	MO. 2	MO 1-2	MO 3-12	MTRGE.	MTRGE.	MTRGE.	MTRGE.	MTRGE.	MTRGE.	YR3-12	AVERAGE
1. PRIMARY DEVELOPMENT																
1.10 HAULAGE LEVEL																
a) HPD/RHD/HLD	meters	2,847.00	150.00	2,562.00	81.00	90.00	171.00	687.00	888.00	852.00	822.00	828.00	807.00	249.00		
b) HFD/MHD	meters	201.00	111.00	265.00	0.00	0.00	0.00	90.00	45.00	60.00	90.00	90.00	0.00	0.00		
Sub Total	**meters**	**3,048.00**	**261.00**	**2,827.00**	**81.00**	**90.00**	**171.00**	**777.00**	**933.00**	**912.00**	**912.00**	**918.00**	**807.00**	**249.00**	**8,506**	
		3,309														
1.20 GRIZZLY LEVEL																
a) GRIZZLY PANEL DRIFT	meters	1,123.00	90.00	732.00	72.00		72.00	333.00	624.00	519.00	456.00	403.00	483.00			
b) GRIZZLY FRINGE DRIFT	meters	148.00		101.00		39.00	39.00	21.00	0.00	0.00	0.00	0.00	0.00			
c) EXHAUST VENT DRIFT	meters	104.00		101.00	8.00	33.00	51.00	75.00	75.00	0.00	0.00	0.00	0.00			
Sub Total	**meters**	**1,375.00**	**90.00**	**934.00**	**80.00**	**72.00**	**162.00**	**429.00**	**699.00**	**519.00**	**456.00**	**403.00**	**483.00**	**0.00**	**4,085**	
		1,465														
1.30 OTHER DEVELOPMENT WORKS																
a) SOUTH GRIZZLY FRINGE DRIFT	meters	375.00														
b) RETURN HAULAGE DRIFT	meters	535.50														
c) EXHAUST VENTILATION DRIFT	meters	617.00														
d) DECLINE TUNNEL	meters	121.00														
e) REMIXER DRIFTS	meters	89.50														
f) ACCESS DRIFTS TO CRUSHER	meters	153.00														
g) CRUSHER CHAMBER	meters	36.25														
h) OREPASSES	meters	36.00														
I) CAR REPAIR BAYS	meters	90.00														
Sub Total	**meters**	**2,053.25**														
TOTAL METERAGE	**meters**	**6,827**													**12,591**	**1,574**
1.40 BAYS & JUNCTIONS																
a) MUCKBAY	un	5.00		2.00				1.00	1.00	1.00	2.00					
b) SWITCH BAY	un	20.00	1.00	11.00	1.00		1.00	6.00	7.00	7.00	7.00	4.00	3.00	1.00		
c) G P D JUNCTION FW	un	2.00		2.00		1.00	1.00		2.00	2.00	0.00	1.00	2.00			
d) G P D JUNCTION HW	un	3.00		2.00		1.00	1.00	1.00	2.00	1.00	1.00	2.00	2.00			
e) HPD JUNCTION	un	11.00		15.00				3.00	4.00	5.00	5.00	6.00	6.00			

Table No. 10 -

SUMMARY OF CARMEN UNDERGROUND LIFT 1 DEVELOPMENT (BLOCK PREPARATION) PLAN

PARTICULARS	UNIT	CAPITALIZED			YEAR 4		TOTAL	DEVELOPMENT TO SUSTAIN 42,000 TPD								
		YEAR 2	YEAR 3	TOTAL					YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	TOTAL	YEARLY
		MO 4-12	MO. 1	MO 2 -12	MO. 1	MO. 2	MO 1-2	MO 3-12	MTRGE.	MTRGE.	MTRGE.	MTRGE.	MTRGE.	MTRGE.	YR3-12	AVERAGE
2. BLOCK PREPARATION																
2.10 EXCAVATI0N																
a) LOADING STATION	set	**75.45**	7.64	110.91	6.00	6.00	12.00	20.00	24.00	22.00	68.00	88.00	82.00	74.00	**501**	63
b) CHUTE INSTALLATION	set	**70.00**	9.33	108.67	6.00	6.00	12.00	20.00	24.00	22.00	68.00	88.00	82.00	74.00	**499**	62
c) TRANSFER RAISE	meters	**3,202.76**	357.52	6,347.31	324.00	324.00	648.00	1,080.00	1,296.00	1,188.00	3,672.00	4,752.00	4,428.00	3,996.00		
d) GRIZZLY DRIFT LHD	meters	**2,212.64**	330.24	2,799.27	165.12	165.12	330.24	542.40	872.64	605.44	1,871.36	2,383.76	2,256.64	2,036.48		
e) RAISE TOP	set	**200.00**	48.00	472.00	24.00	24.00	48.00	80.00	96.00	88.00	272.00	352.00	328.00	296.00	**2,032**	254
f) DRAW RAISE	meters	**2,140.00**	535.00	6,313.00	321.00	321.00	642.00	1,070.00	1,284.00	1,177.00	3,638.00	4,708.00	4,387.00	3,959.00		
g) SLOT DRIFT	meters	**1,137.00**	258.00	1,064.00	30.00	30.00	60.00	477.00	584.00	315.00	282.00	368.00	333.00			
h) RETREAT DRIFT	meters	**1,503.91**	267.91	2,960.45	169.68	169.68	339.36	565.60	678.72	622.16	1,923.04	2,488.64	2,318.96	2,092.72		
i) UNDERCUT PILLAR	m²	**14,896.10**	3,890.25	47,523.10	2,478.00	2,478.00	4,956.00	8,148.00	9,912.00	9,086.00	28,084.00	35,812.00	33,866.00	30,562.00	**207,949**	25,994
j) UNDERCUT ACC. DRIFT	meters	**428.00**	12.00	110.00	50.00	-	50.00	0.00	60.00	50.00	60.00	120.00	6.00			
TOTAL	**meters**	10,624.31	**1,760.67**	**19,594.03**	**1,059.80**		**2,069.60**	**3,735.00**	**4,775.36**	**3,957.60**	**11,446.40**	**14,820.40**	**13,729.60**	**12,084.20**	**86,212**	10,777
		12,385														
2.20 CONCRETING SUPPORT																
a) GRIZZLY PANEL DRIFT	meters	**529.45**	64.90	809.45	42.00	42.00	84.00	140.00	168.00	154.00	476.00	616.00	574.00	518.00		
b) LOADING STATION	set	**48.33**	13.67	106.00	6.00	6.00	12.00	20.00	24.00	22.00	68.00	88.00	82.00	74.00		
c) GRIZZLY DRIFT	meters	2,201.31	234.37	3,010.52	165.12	165.12	330.24	542.40	872.64	605.44	1,871.36	2,383.76	2,256.64	2,036.48		
d) RAISE TOP	set	200.00	48.00	472.00	24.00	24.00	48.00	80.00	96.00	88.00	272.00	352.00	328.00	296.00		
TOTAL	**meters**	2,730.76	**299.27**	**3,819.97**	**207.12**	**207.12**	**414.24**	**682.40**	**1,040.64**	**759.44**	**2,347.36**	**2,999.76**	**2,830.64**	**2,554.48**	17,449	2,181
		3,030														
2.30 NUMBER OF LINES UNDERCUT		16	4	58	3	3	6	10	12	11	34	44	41	37		
C:\marescug\PRI BLK PREP\METSUM MARCH 2004 REVISION																

NOTE:

1.0 Month 4 of year 2 to Month 1 of year 3, Development is on Capital Cost.

2.0 By Month 2 of year 4, the 42,000 TPD is already attained.

3.0 Starting Month 2 of year 3, Development is on operating cost.

Table No. 15

PRODUCTION PERFORMANCE RECORD OF SEALED BLOCKS FOR DAS UNDERGROUND LIFT 1

YEAR	Reserve Tonnes	Mined-out Tonnes	Reserve Grade %Cu	Mined-out Grade %Cu	Retrospect Grade Factor	Percent Extraction	
						Tonnes	Metal
1969	7,385,000	7,331,689	0.70	0.65	0.929	99.3	92.2
1970	4,833,000	5,149,654	0.80	0.79	0.988	106.6	105.2
1971	7,777,000	7,995,749	0.59	0.56	0.949	102.8	97.6
1973	9,368,000	8,029,598	0.64	0.56	0.875	85.7	75.0
1974	7,247,000	7,083,167	0.54	0.54	1.000	97.7	97.7
1975	4,396,000	4,472,498	0.57	0.61	1.070	101.7	108.9
1976	9,592,000	9,742,114	0.72	0.72	1.000	101.6	101.6
1977	4,037,000	3,453,859	0.77	0.69	0.896	85.6	76.7
1978	8,042,000	7,996,672	0.67	0.70	1.045	99.4	103.9
1979	9,128,000	8,827,704	0.71	0.74	1.042	96.7	100.8
1980	6,748,000	8,704,095	0.63	0.51	0.810	129.0	104.4
1981	8,113,000	7,563,199	0.67	0.60	0.896	93.2	83.5
1982	7,731,000	7,035,608	0.73	0.63	0.863	91.0	78.5
1983	6,868,000	6,782,753	0.60	0.65	1.083	98.8	107.0
1984	8,353,000	6,958,908	0.46	0.50	1.087	83.3	90.6
1985	4,146,000	3,486,384	0.39	0.42	1.077	84.1	90.6
1986	5,043,000	5,137,427	0.45	0.45	1.000	101.9	101.9
1987	4,683,000	4,625,474	0.40	0.38	0.950	98.8	93.8
1988	776,000	1,032,310	0.35	0.36	1.029	133.0	136.8
Total Avg.	**124,266,000**	**121,408,862**	**0.62**	**0.60**	**0.968**	**97.7**	**94.6**

Notes:

1. Low production in 1970 due to muckrush.
2. 1972 record of sealed blocks is missing.

Table No. 16 - SUMMARY OF PRODUCTION FORECAST FOR CARMEN UG LIFT-1 OREBODY

	YEARS											
	2 (mos 9-12)	3	4	5	6	7	8	9	10	11	12	TOTAL
Tonnes ,Per Year	785,200	7,761,400	15,021,480	15,204,000	15,204,000	15,204,000	15,204,000	15,204,000	15,204,000	11,584,000	5,860,742	132,236,822
,Per Day	2,200	21,400	41,900	42,000	42,000	42,000	42,000	42,000	42,000	32,000	16,190	30,500
Grade, % Copper	0.46	0.51	0.47	0.38	0.42	0.39	0.37	0.38	0.35	0.37	0.36	0.40
Contained (,pounds	6,910,643	77,078;174	134,852,455	106,675,000	119,926,553	109,987,888	103,362,112	106,675,000	96,736,335	78,752,085	38,566,341	979,522,587
Contained (,ounces	3,836	45,673	72,385	43,232	56,028	46,432	40,250	43,232	34,403	30,666	14,367	430,503
Contained ',ounces	14,502	173,561	275,050	164,303	212,880	176,441	152,959	164,303	130,730	116,540	54,585	1,635,855
Contained F,DMT	8,350	83,093	160,818	162,772	162,772	162,772	162,772	162,772	162,772	124,017	62,744	1,415,655

TABLE NO. 18 -- CARMEN UNDERGROUND LIFT-1 MANNING SCHEDULE

		YEAR 1*												YEAR 2**										YEAR 3												Y--4		FIN TO
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2-12	Y5-12
1.0	Eng'g/D.Ctrol/Vent.	1	1	1	1	4	4	4	4	4	4	4	4	6	6	6	6	6	6	6	6	6	29	29	29	29	31	31	31	31	31	31	46	46	46	46	46	46	46	46
2.0	Adm/Logistics & Supply					13	13	13	13	25	25	25	34	46	46	46	46	46	46	46	46	46	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62
3.0	Other Mining Services (Grizzly Cleaning, SBDT, and other Mine Capital Devt.)	1	1	1	1	46	46	62	62	163	187	195	262	351	352	300	230	273	271	293	290	227	250	250	235	219	137	73	73	57	57	57	57	36	36	36	36	36	36	36
4.0	Primary Development (Grizzly,Vent., Haulage, Track, Pipe)																147	148	148	148	148	116	116	116	80	80	60	60	60	40	40	40	40	40	40	40	40	40	40	40
5.0	Block Preparation , Mining																47	117	217	266	285	285	311	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	133	133
	, Concreting																23	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	111	111
6.0	Production , Draw/Repair																					96	96	96	96	96	177	195	220	234	266	281	303	352	399	417	473	479	491	491
	, Hauling																					186	186	186	186	186	230	235	244	265	268	273	279	290	299	304	323	332	334	319
7.0	Underground Services (Mech'l., Elect'l., Compressors, etc.)				274	369	359	410	414	430	403	421	400	391	391	401	389	385	383	394	385	398	386	388	396	394	316	316	316	306	320	306	306	306	306	306	306	306	306	306
	TOTAL	2	2	2	276	432	422	489	493	622	619	645	700	794	795	753	888	1,130	1,226	1,308	1,315	1,515	1,591	1,530	1,487	1,469	1,416	1,375	1,409	1,398	1,447	1,453	1,496	1,535	1,591	1,614	1,689	1,704	1,559	1.544

* Year-1 of Rehabiliaton Period
** Start of Production

ANNEX– D

CERTIFICATE OF NON-COVERAGE

Republic of the Philippines
Department of Environment and Natural Resources
Visayas Avenue, Diliman, Quezon City
Tel Nos. (632) 929-66-26 to 29 • (632) 929-62-52
929-66-20 • 929-66-33 to 35
929-70-41 to 43

JAN 24 2005

MR. ALFREDO C. RAMOS
Chairman and Chief Executive Officer
ATLAS CONSOLIDATED MINING AND DEVELOPMENT CORPORATION
7th Floor, Quad Alpha Centrum, 125 Pioneer Street
Mandaluyong City

Dear *Mr. Ramos:*

This refers to your letter dated October 4, 2004 requesting for the issuance of a Certificate of Non-Coverage for your mining operations in Don Andres Soriano, Toledo City, Cebu.

After careful evaluation of the documents on hand, this Office has decided to grant a Certificate of Non-Coverage for the above-said mining operations in Cebu, subject to existing rules and regulations. Please be advised, however, that this Office will be monitoring the mining operations periodically to ensure your compliance with environmental laws. Further, any expansion or modification of currently approved operations will be subject to the Environmental Impact Assessment (EIA) requirements.

MICHAEL T. DEFENSOR
Secretary

cc: *EMB Region VII*
MGB Region VII