

Šuplja stijena Historic Zn, Pb, Cu (+Ag, Au) Mine, Montenegro, Water Outburst Experience

Presentation prepared by:

Dr. Uros Herlec,
Chief mine geologist, and
President of the Board of Directors
of Gradir Montenegro d.o.o.



INTRODUCTION:



- The Šuplja stijena mine ore has average 3,5% (Zn+Pb) and large ore reserves available for **low cost** open pit production and ore reserves for more than 30 years of production.
- New topmost technology – “MetsoMinerals” new Pre-Concentration and Flotation will guarantee the **best ore beneficiation results**.
- Top quality Zn and Pb concentrates production. No penalties for Fe, As, Bi, Sb, Hg, Cd; credits for Ag and Au.
- Favourable market condition and equipement enable profitable production.
- Full production will start in June 2010.
- **Big exploration potential** gives opportunity to double the mining and beneficiation capacities in near future.

Introduction



- New open pit “Suplja stijena” is located in the area of historic underground mining (1953-1987), and surface mining (1997-2000) of Zn+Pb(Ag, Au) ore, which is hosted in hydrothermally altered andesite.
- Recent open pit mining target is the remaining part of a massive sulphide ore veins and disseminated – veinlet impregnation (stockwerk) sulphide mineralisation between the mainly mined out ore vein-type ore bodies.
- New dense media liquid pre-concentration and new up to date flotation were designed and produced by **reknowned** “MetsoMinerals Ltd.”. We plan to install them till the end of January 2010.



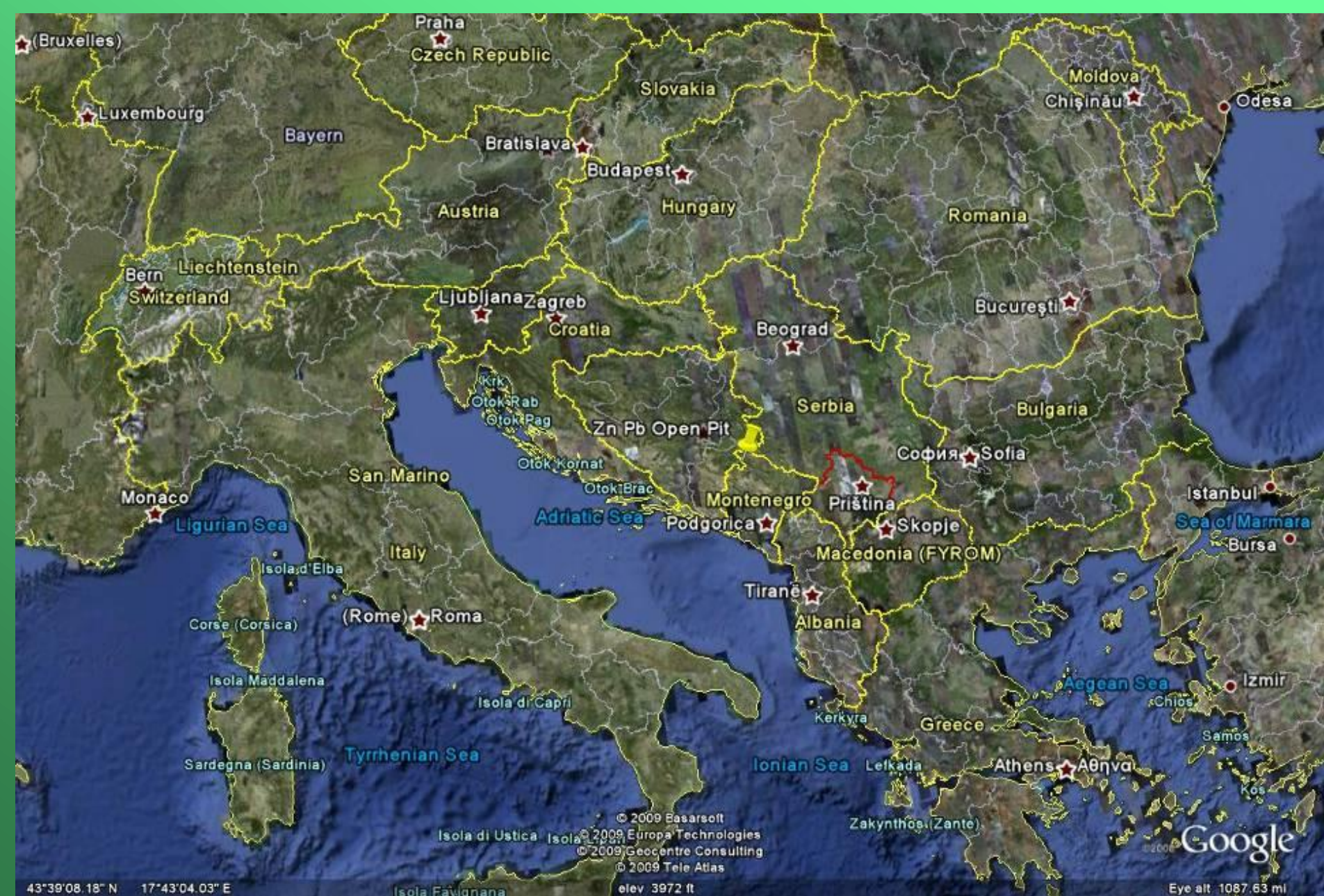
Project main goals

- The yearly planned open pit production is **1.000.000 t of ore**. Ore will be pre-concentrated by Dense Media Separation.
- Flotation will process **350.000 t** of pre-concentrate per year.
- The yearly planned quantity of metal from the produced concentrate is more than:
17.000 t of Zn, 5000 t of Pb, 3,4 t of Ag, 200 kg of Au.
- Removal of **1.000.000t/year hanging wall limestone** burden is needed.
- High quality **stone aggregate and lime** will be produced. With the stone aggregate and lime production mining of the hanging wall gangue limestone is planned to be **payed**.
- Mineral pyrite concentrate is going to be used for neutralisation of high pH value waters from alumina production in Kombinat Aluminija Podgorica.
- Environmentally sustainable production of the environment will be ensured with the use of hanging wall burden limestone as a buffer for acid mine drainage waters (no extra costs needed).

Geographic position of Montenegro



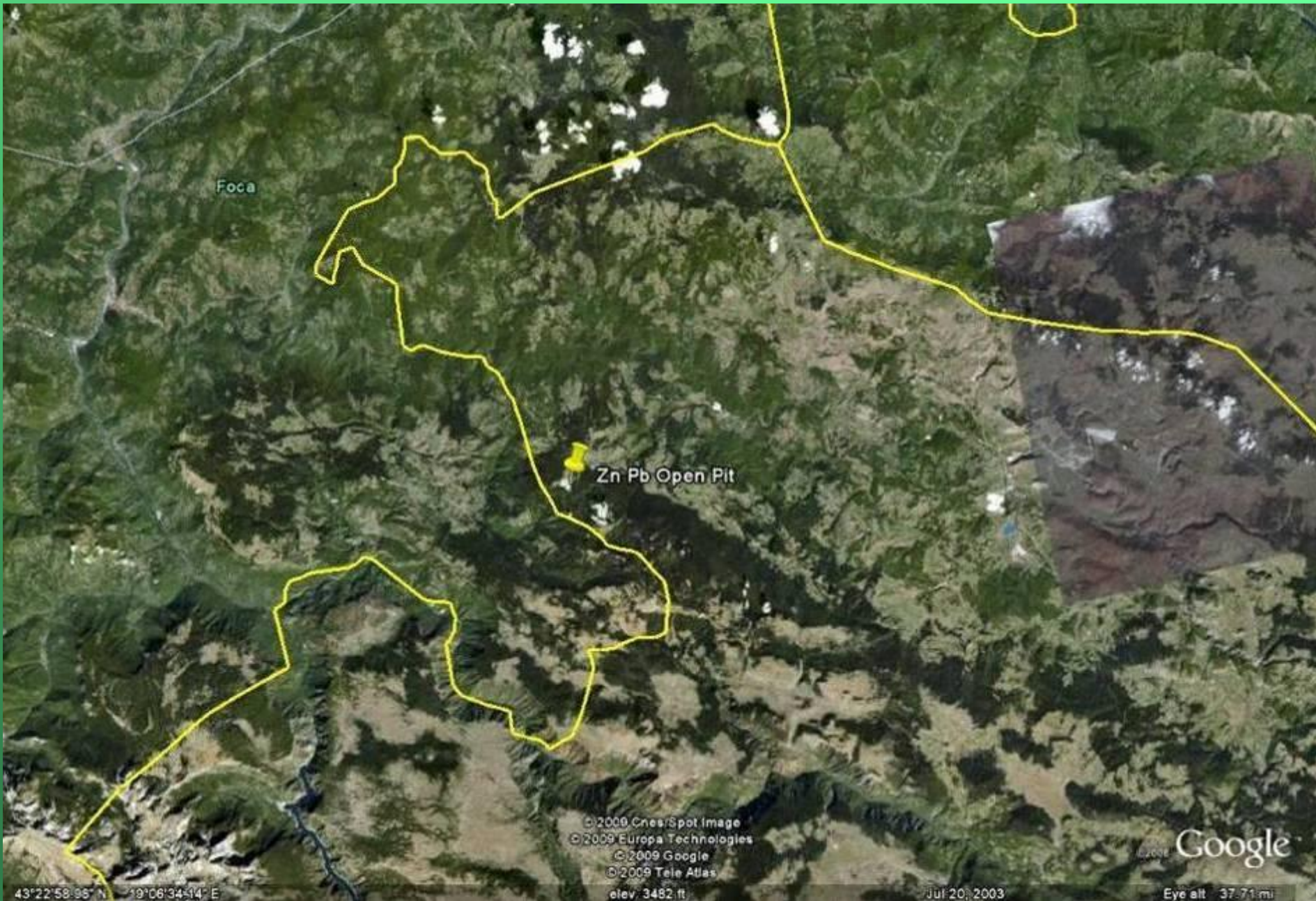
- Part of the Middle Europe.
- Central position in the Balkan peninsula.
- Neighbour states are Croatia, Bosnia and Hercegovina, Serbia, Kosova, Albania.
- Positioned at the coast of the Adriatic Sea (part of the Mediteranean).
- Most important trade communication door is port Bar.
- From the mine to the port of Bar on the Adriatic Sea there is 300 km of bitumen road for a heavy truck transport.
- 75 km of bitumen road for a truck transport to the closest railway station.



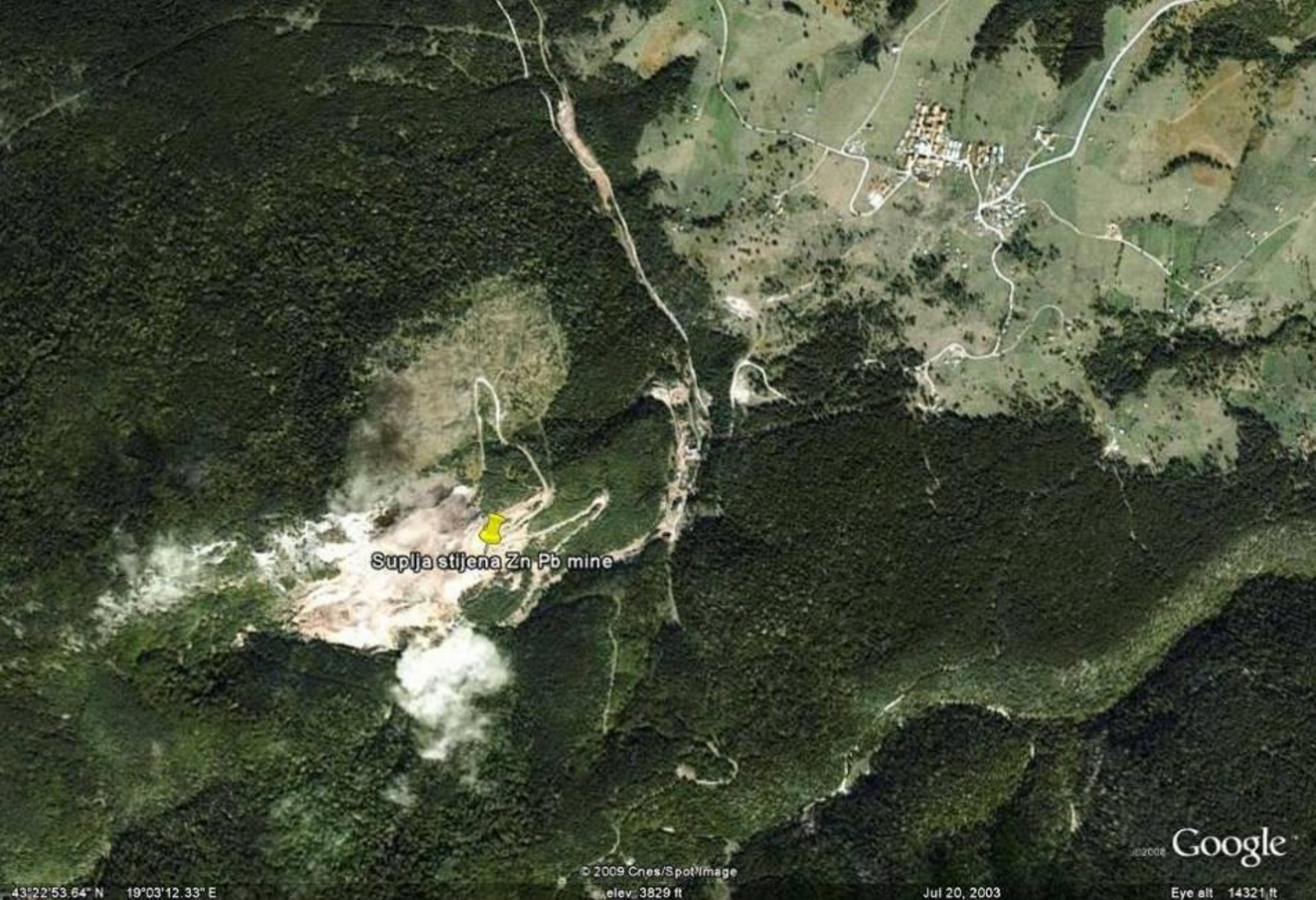
Geographic position: State of Montenegro is located at the coast of the Adriatic Sea (Mediterranean), East of Apennine peninsula and Italy, NW of Albania, SW of Serbia, and SE of Bosnia and Herzegovina.



Geographic position: Open pit Suplja stijena is located in the NW of the Montenegro state (original meaning of the name is “Black Mountain”).



Geographic position: Open pit is located in Montenegro at the border with Bosnia and Herzegovina. About 10km to the NE of the ore field is the border with the state of Serbia.



Geographic coordinates of the open pit “Šuplja stijena”:

43°22'47,04’’N; 19°02'47,04’’E; elevation from 1180m up to 1470m above sea level.



To the closest town Plevlja (with more than 21,000 inhabitants) there is 35km's of asphalt road for a heavy truck transports up to 25 tonnes of load. Brown coal open pit (mining tradition is strong, job market developed) and Thermal Electric Power Plant is located near the town Plevlja.



closest railway station

Foca

Zn Pb Open Pit

Coal Open Pit

Town Plevlja

Prijepolje

© 2009 Cnes/Spot Image
© 2009 Europa Technologies
© 2009 Google
© 2009 Tele Atlas
elev 3344 ft

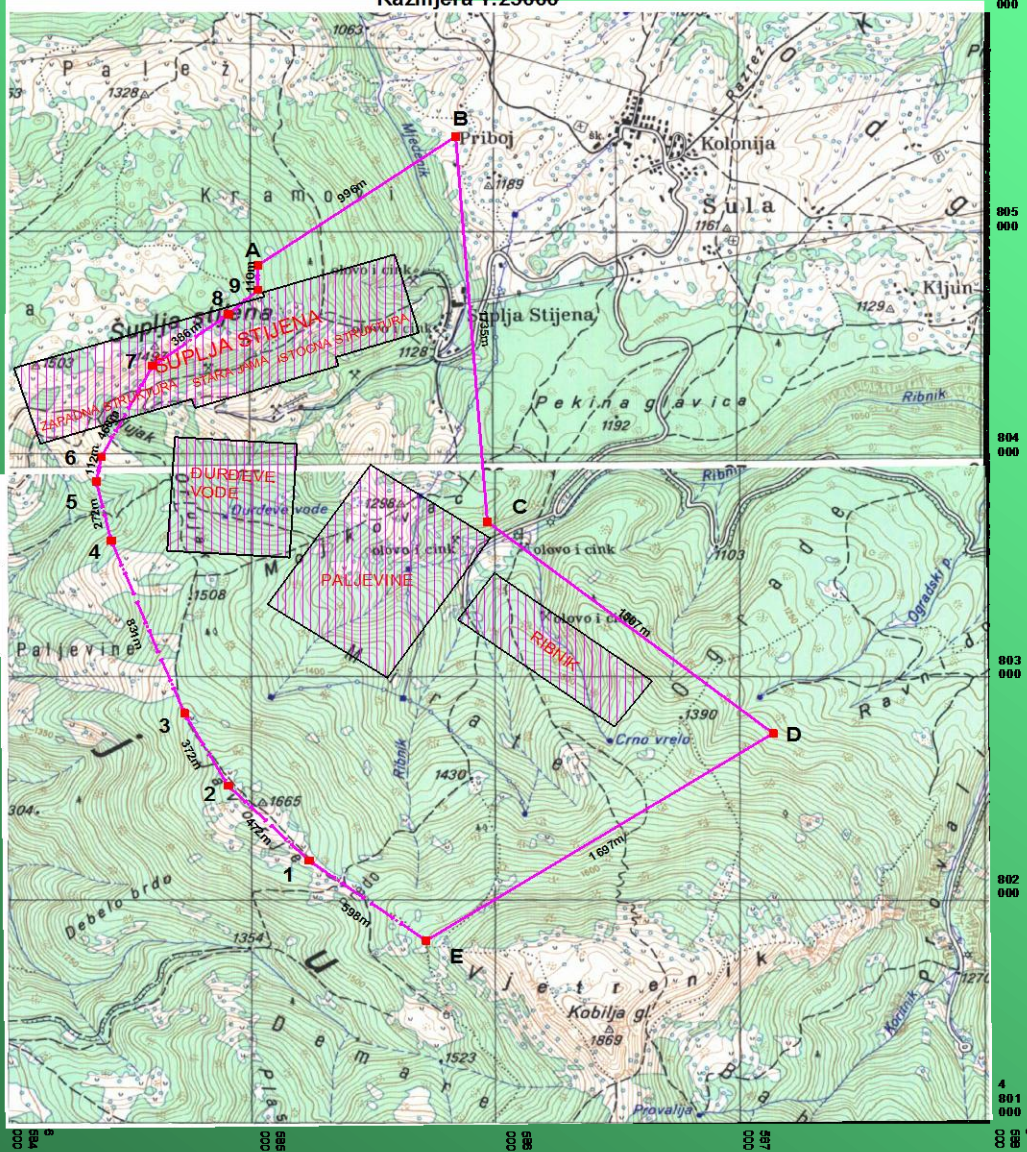
Jul 20, 2003

Google

Eye alt 45.93 mi





Closest Railway Station is in the Town Prijepolje (Serbia) at the Distance of 70kms Bitumen Road. Prijepolje is Connected with the Port Bar on Adriatic Sea (Mediterranean).

ISTRAŽNO-EKSPLOATACIONI PROSTOR RUDNIKA OLOVA I CINKA "ŠUPLJA STIJENA"
 Razmjera 1:25000



TACKE	KOORDINATE	STRANA	POVRŠINA
A	6585020 4804850	A-B 996	
B	6585830 4805430	B-C 1735	
C	6587960 4803700	C-D 1507	
D	6587130 4802750	D-E 1697	
E	6585710 4801820	E-A 3613m	4,8 km ²

LEGENDA:

-  DRŽAVNA GRANICA
-  GRANICA ISTRAŽNO-EKSPLOATACIONOG PROSTORA
-  REPERNE TAČKE ISTRAŽNO-EKSPLOATACIONOG PROSTORA
-  PROSTOR LEŽIŠTA RUDNIKA OLOVA I CINKA "ŠUPLJA STIJENA"



Map of the mining lease - concession field and schematic position of partly explored orebodies.

Drawn on the topographic map, ratio of the original is 1:25.000.

History of underground and surface mining



- Vein type of mineralisation found on the surface in 1948.
- Exploration till 1952 proved reserves for the start of underground mine operation and installation of Flotation for 250.000t of ore per year.
- Positioning of the Flotation 9,6kms from the mine to the town Gradac was a problematic decision due to high transport costs. Steel rope cable transport from the mine was installed in 1953. For its maintenance and operation **280 workers** were employed. Operated till 1987.
- Up to **580 miners** employed in the underground mine.
- Flotational gangue depony (tailings) was located in the meander of the river Čehotina (tunnel deviation of the river was needed).

Underground mine operated since 1953 till 1987.

Mine was a part of RMHK Trepča (Mining, Metalurgy and Chemical Kombinate Trepča (Stan Trg mining area) in Kosova (also part of ex Tito's Yugoslavia).

Massive sphalerite and galena ore vein type of mineralisation was mainly mined out. Security pillars and thinner veins still sit there.

Mine was closed in 1987 due to low metal prices at the time and a lack of reserves of the vein type of ore.

History of the underground mining



History of the surface mining

- Open pit started in 1997. Lower grade disseminated - vein impregnation (stockwerk) mineralisation between the already mined out ore vein system was the mining target.
- Truck transport - 14kms of bitumen road to the Old flotation in Gradac from 1997-2000 was too expensive. Steel rope system was not useful anymore at that time.
- Open pit was closed in 2000 due to the war (NATO strikes of the smelter in Trepča, Kosova) and international trade blockade of ex-Yugoslavia (international metal market was not accessible anymore).



Open pit as it was abandoned in the year 2000. Photo taken in early spring 2008.





Exploration works statistics

From 1948 to 1991:

54404m of adits,
7711m of inclines, and
83031m of drill cores.

Around 95% of exploration works were done in the area of the existing mining lease field of Šuplja stijena.

Extremely valuable database!



Historic production statistics

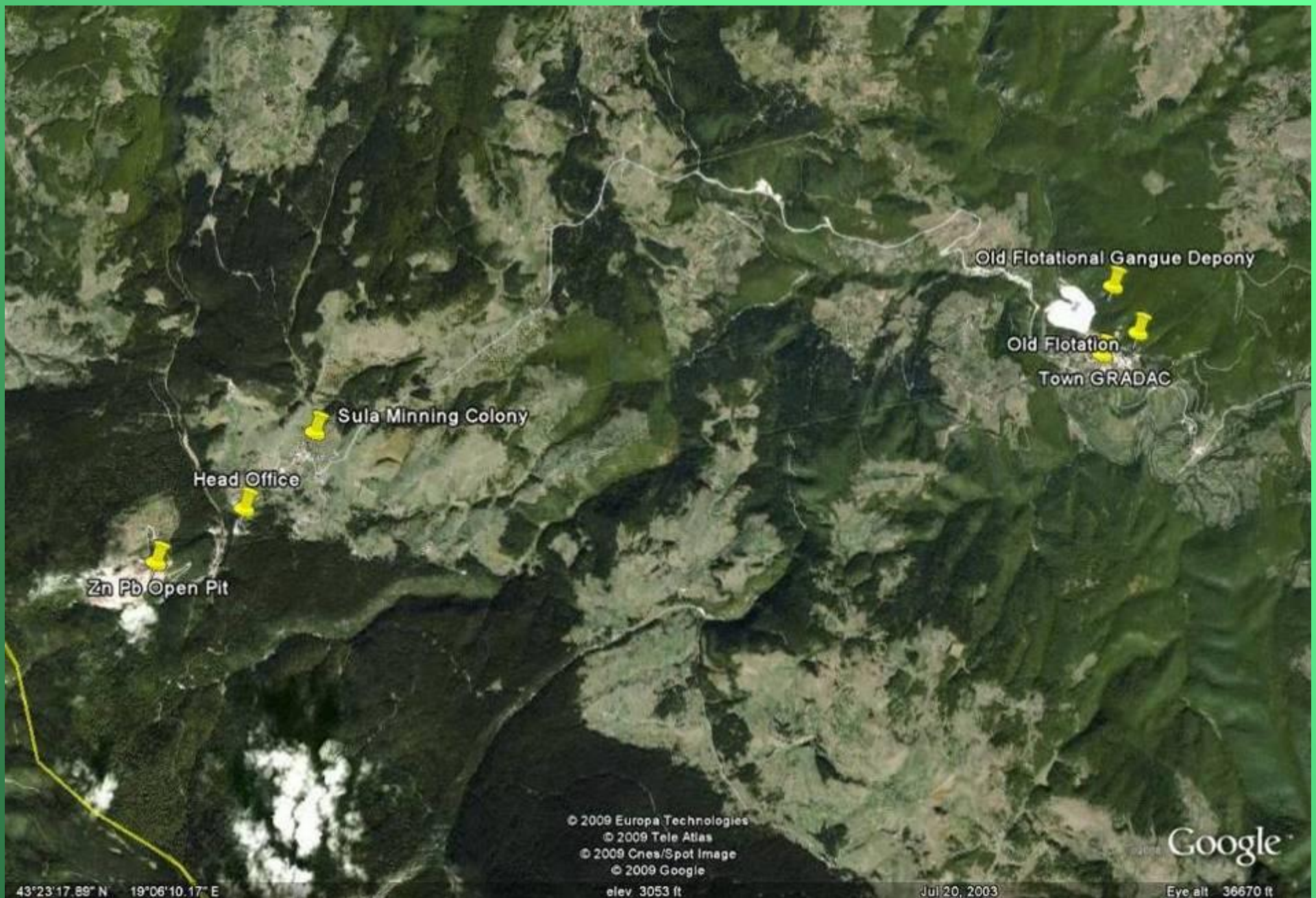
- UNDERGROUND PRODUCTION 1953. – 1987.

	ORE (tonnes)	% OF METAL		ORE CONCENTRATE PRODUCED		METAL IN ORE CALCULATED	
		Pb (%)	Zn (%)	Pb (t)	Zn (t)	Pb (t)	Zn (t)
•							
•							
•	SUM	3.950222	1,72	4,73	76687	299890	67927 186784

- OPEN PIT PRODUCTION 1996. – 2000.

	ORE (tonnes)	% OF METAL		ORE CONCENTRATE PRODUCED	
		Pb (%)	Zn (%)	Pb (t)	Zn (t)
•					
•					
•	283016	0,72	1,42	1975	4352

Old Flotation and Flotational Gangue Depony – tailings is located in town Gradac along river Cehotina 9,6kms from the mine.



43°23'17.89" N 19°06'10.17" E

© 2009 Europa Technologies
© 2009 Tele Atlas
© 2009 Cnes/Spot Image
© 2009 Google
elev. 3053 ft

Jul 20, 2003

Google

Eye alt. 36670 ft

**9,6kms of steel rope cable transport from the mine was built in 1953.
280 workers were employed for the maintenance of it. Operated till 1987.**



Old Flotation had capacity of 250.000 t of ore/year. In the Flotation gangue depony there is around 3,750.000 t of milled rock (-100µm size) deposited.



© 2009 Europa Technologies
© 2009 Tele Atlas
© 2009 Cnes/Spot Image
© 2009 Google

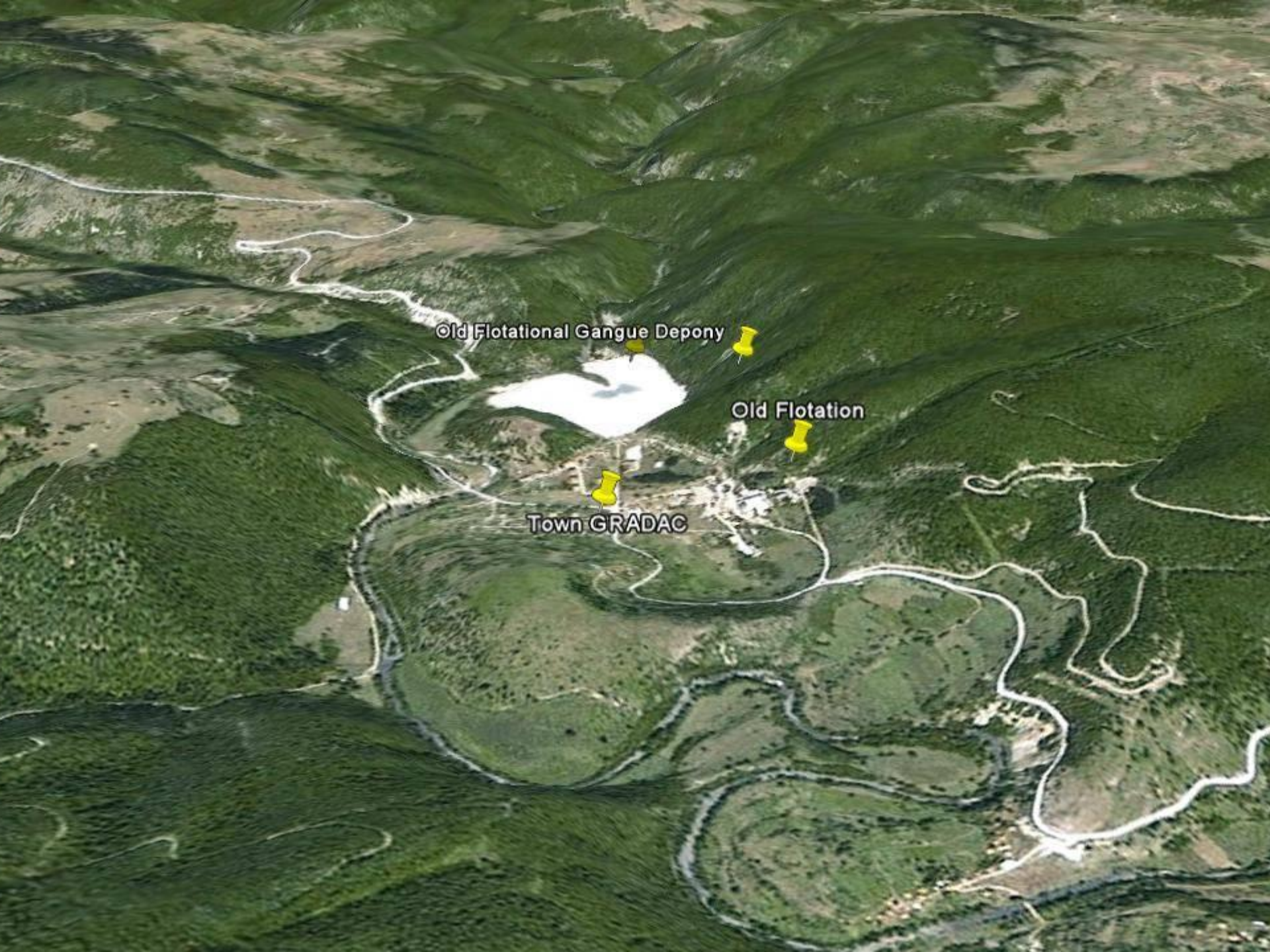
Google

43°23'38.62" N 19°09'17.62" E

elev 2243 ft

Jul 20, 2003

Eye alt 12450 ft



Old Flotational Gangue Depony

Old Flotation

Town GRADAC

Town of Gradac and Flotation Gangue Depony in the Former Meander of the River Cehotina.



Depony is constantly flooded by the local creek. This conserved the primary mineralogy of ore minerals and will enable their reworking. GradirMontenegro Ltd. owns the depony.



Remaining already milled rock contain more than 0,7% of Pb+Zn.
It is already profitable to rework it. Studies on pre-concentration on site are in progress.

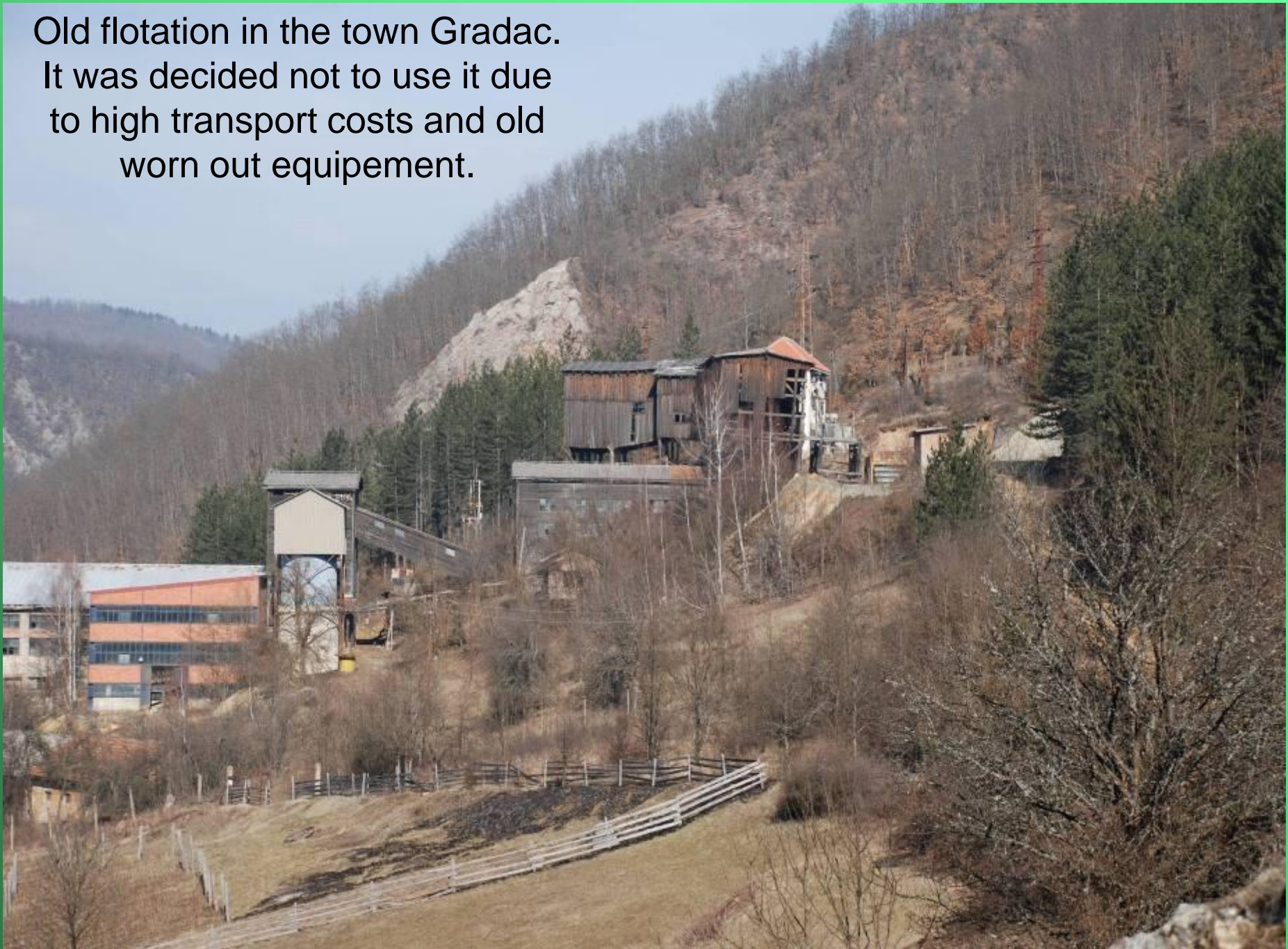


Montenegro state is obliged to finance the dam construction for prevention a river erosion of the tailings depony.

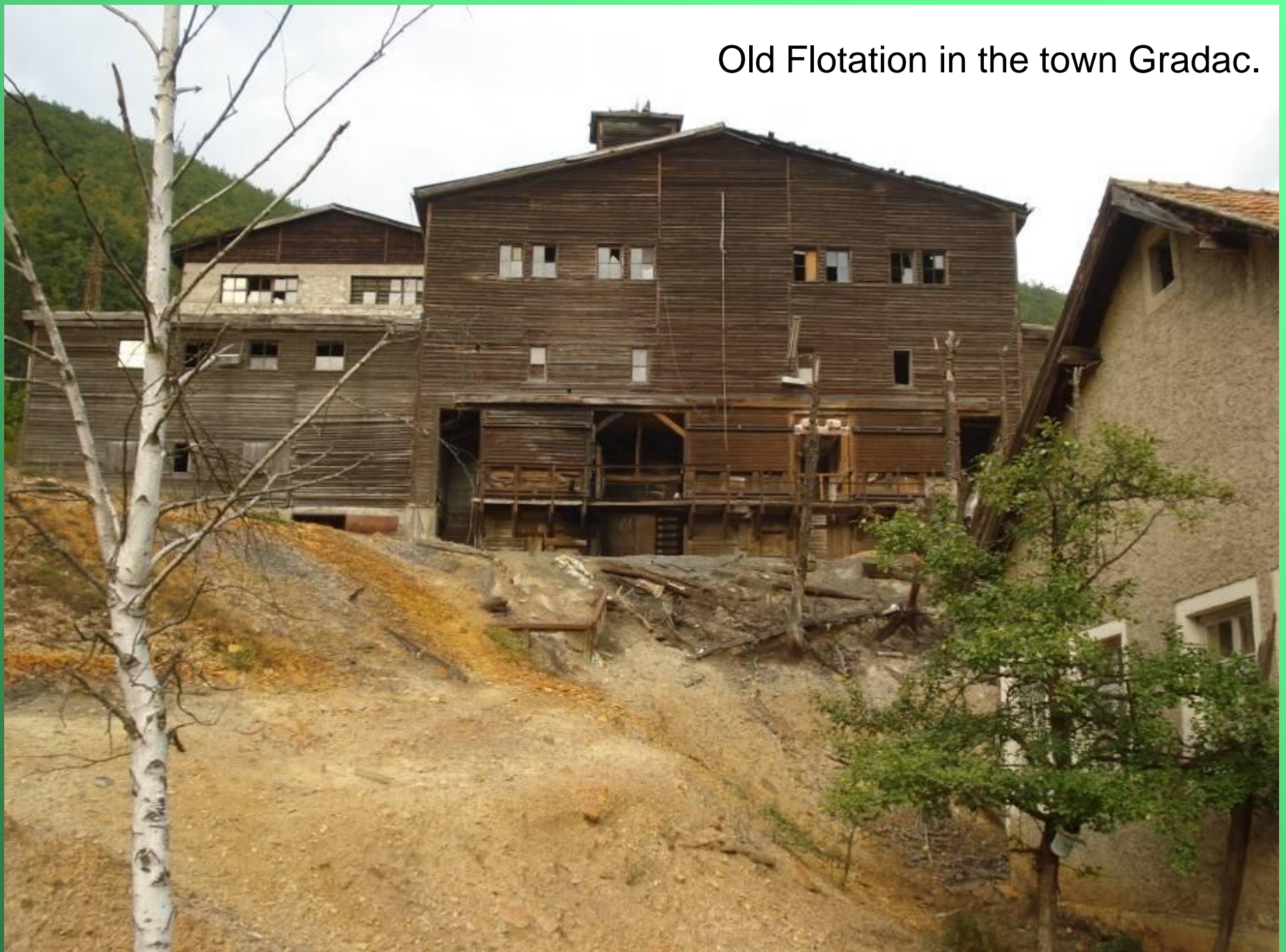




Old flotation in the town Gradac.
It was decided not to use it due
to high transport costs and old
worn out equipement.



Old Flotation in the town Gradac.



Flotational cells in the Old Flotation (1953-2000) in the town of Gradac can not be used anymore.

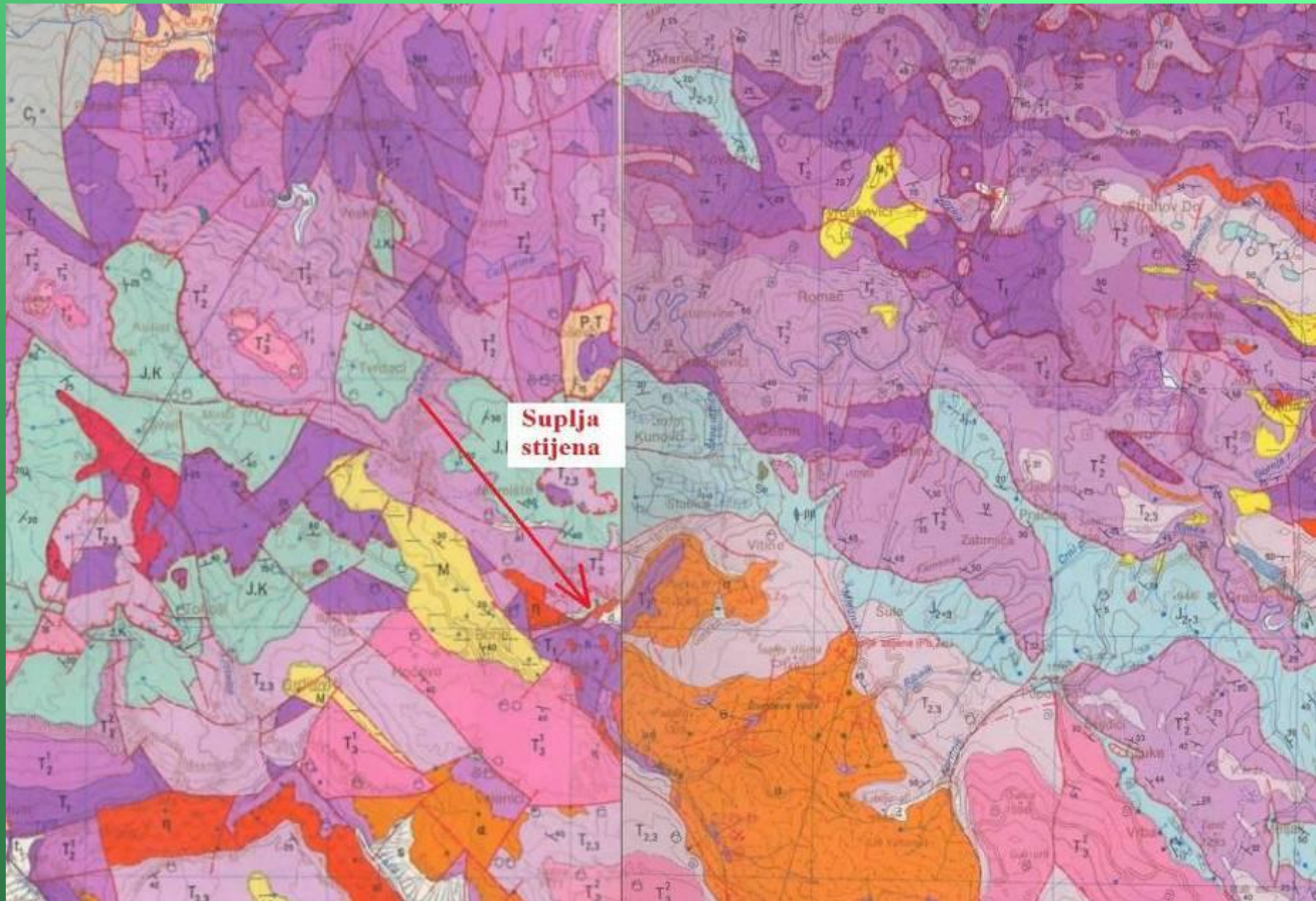


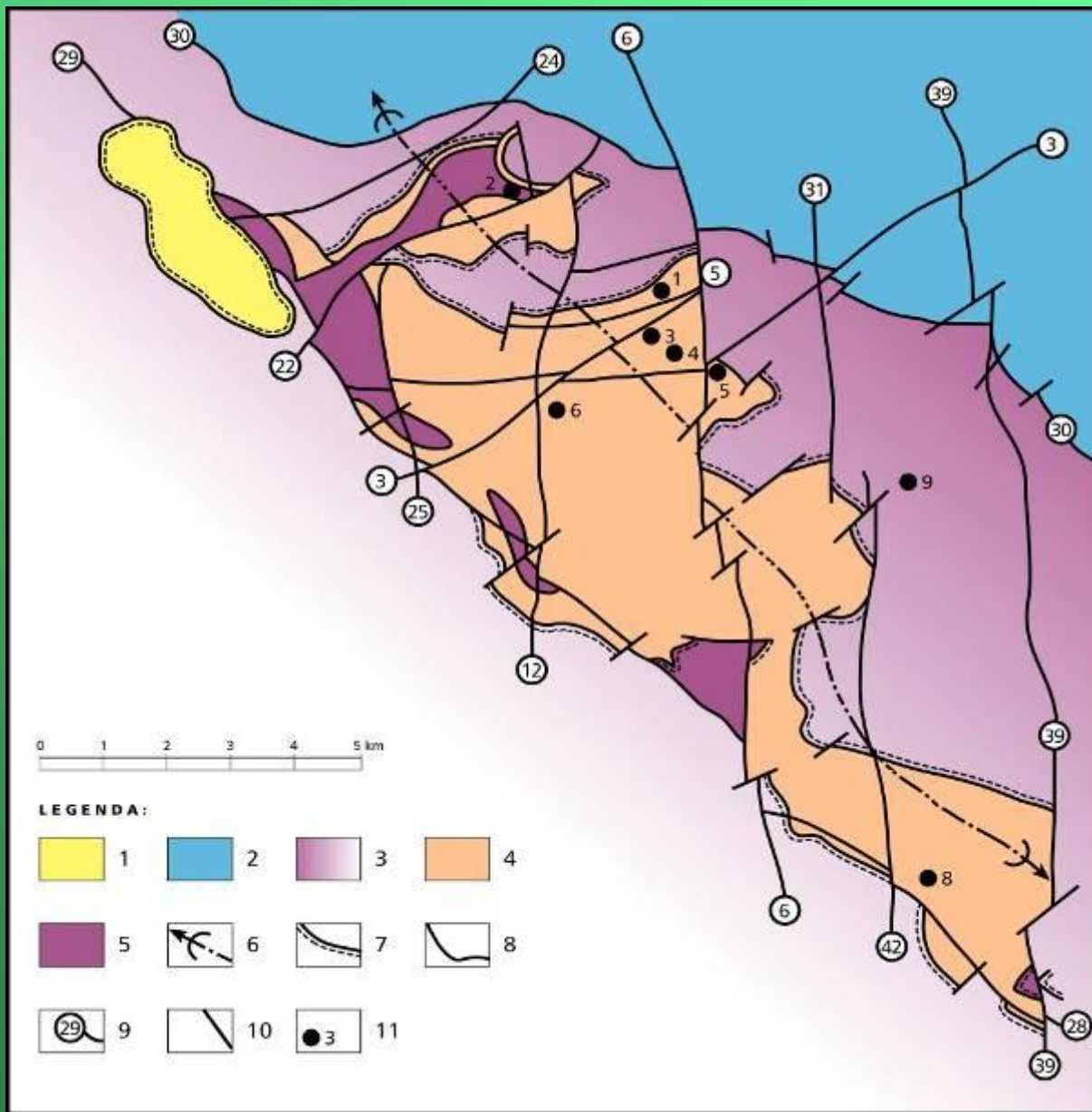
Geology of the ore field “Šuplja stijena”



- Geotectonic genetic environment – Middle Triassic aborted rifting (“Montenegro” tectonic trough was active in Anisian and Ladinian – Middle Triassic).
- **Volcanic succession** originated by multiphase bimodal effusive volcanism (basalt – rhyolite).
- Later **dioritic intrusions** gave hydrothermal ore fluids.
- Structurally controlled postvolcanic massive sulphide **vein type and veinlet impregnation** – disseminated (stockwerk) Zn, Pb (Ag) mineralisation.
- Host rock andesite is hydrothermally altered: chloritised, sericitised, silicified, and pyritised.

Regional Geological Map 1:100.000 with the Detail Rock Unit Description. Basic Geological Map of Yugoslavia - Sheets Foča and Plevlja.





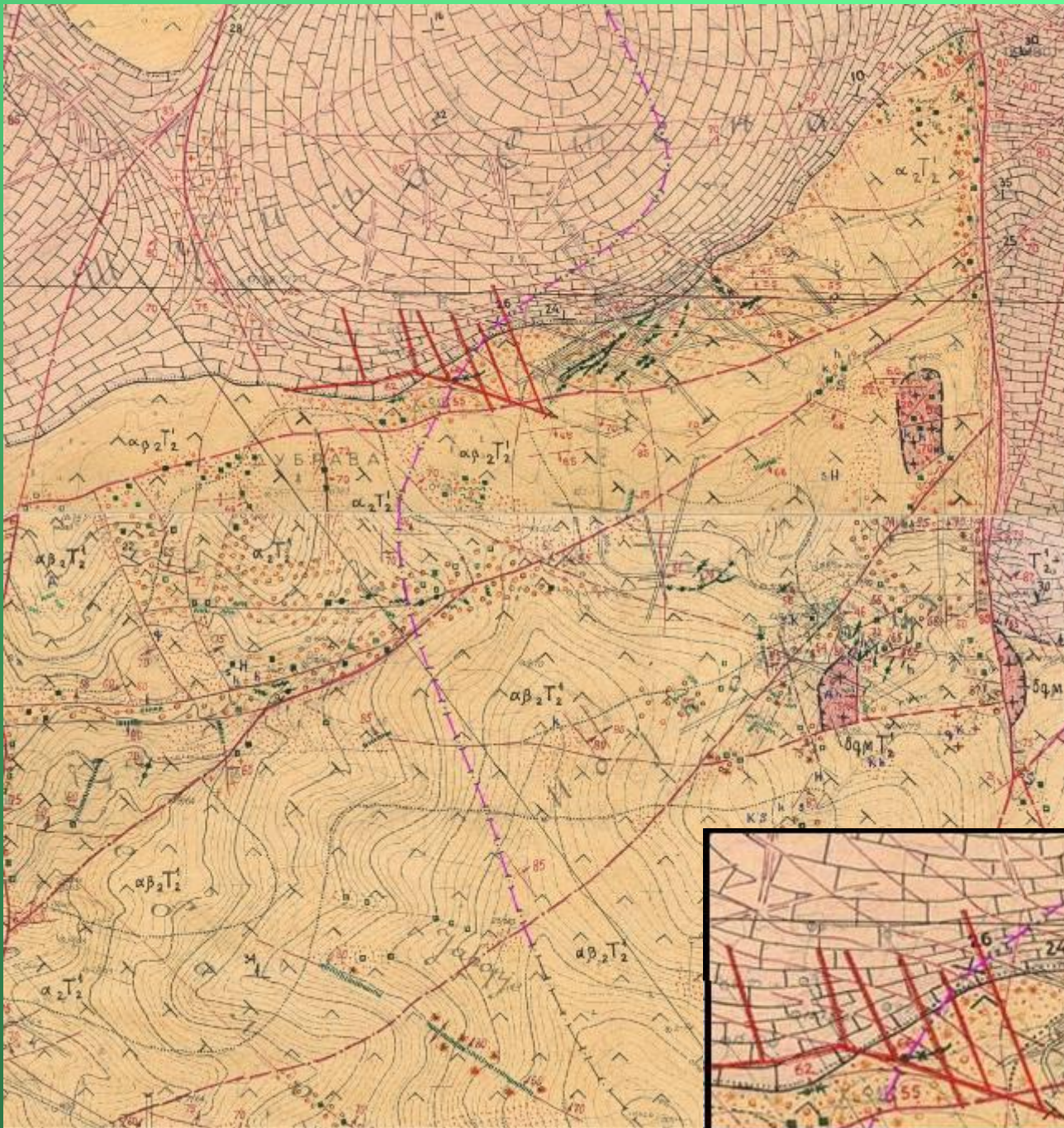
LEGEND:

1. Neogene clastics
2. Jurassic limestone&chert
3. Limestones T_2-T_3 ,
4. Effusive rocks $_2T_2^2$
5. Volcanic+sedimentary rocks $_1T_2^1 + _2T_2^2$
6. Axis of the Ljubišnja anticline
7. Diskordant contact
8. Normal contact
9. Main faults
10. Other faults
11. Ore deposits and ore minerals occurrences

NAMED FAULTS:

- 3 – Debelopotočki
- 6 – Ribnički
- 12 – Ravnogorski,
- 22 – Riječki
- 5 – Mjedenički
- 26 – Viševinski,
- 25 – Granitni,
- 28 – Konjopoljski,

Rock types and position of the regional tectonic structures in the area of Ljubišnja, Supla stijena ore field. Position of the Suplja stijena mine – 1.



Detailed Geological
Map 1:10.000 for
100km² of mineralised
volcanic rocks -
andesite.

Positions of historic
underground
works, geological
and geochemical
data are
documented in
detail on plans of
all 9 horizons also
onto the maps with
the ratio 1:250.

General Lithology of the mining lease concession field with the defined position of vein type Zn and Pb ore bodies.

Four ore deposits:

Šuplja stijena

Eastern Structure (Istočna struktura)

Old Mine (Stara jama)

Western Structure (Zapadna struktura)

Durdeve vode

Paljevine

Ribnik

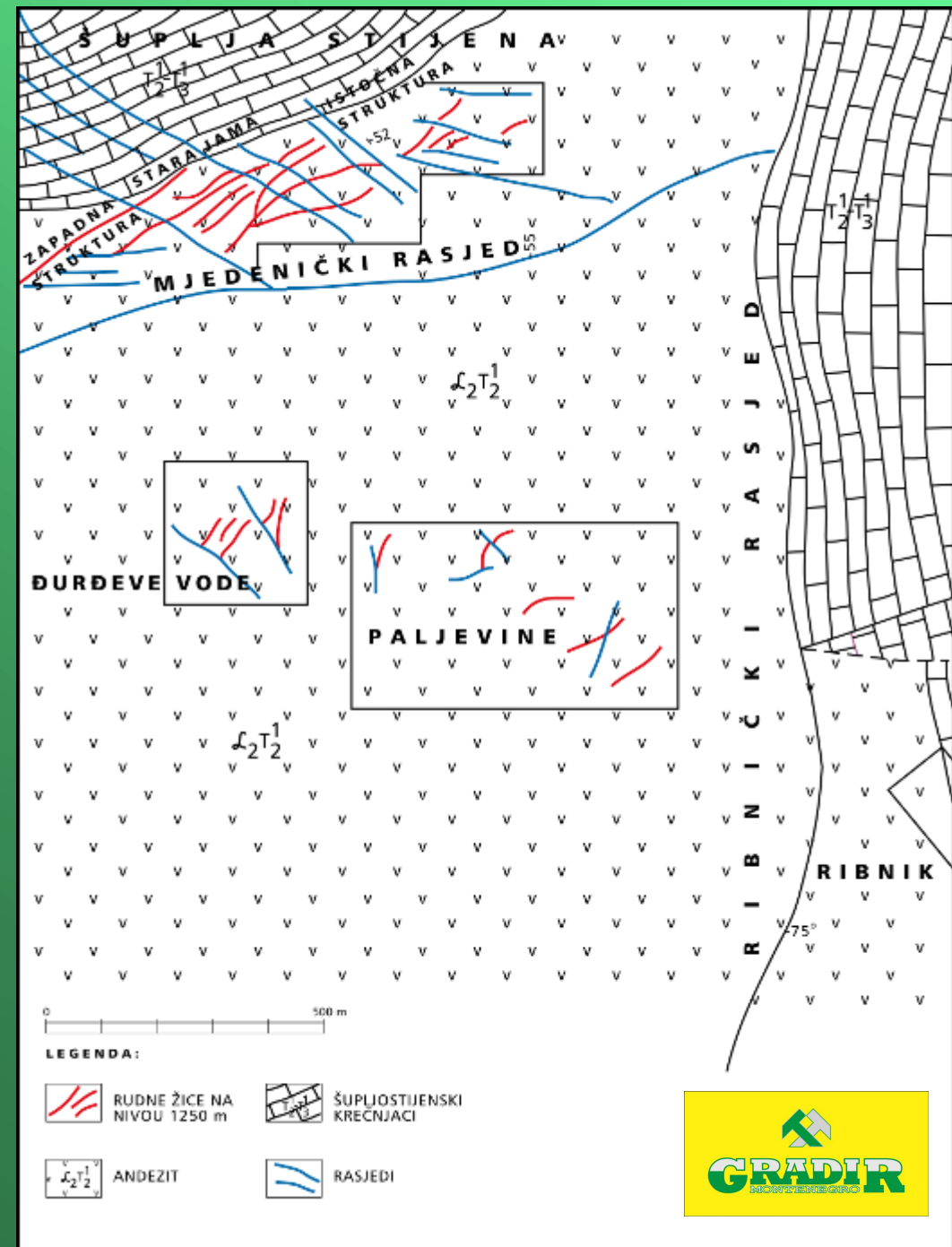
Legend:

Red lines: ore vein systems

Blue lines: faults.

Hanging wall – limestone.

Host rock - andesite.



Suplja stijena type of the ore mineralisation



- Two types of ore bodies:
 1. Ore Veins
 2. Disseminated - Veinlet Impregnation (Stockwerk)
- General orientation of ore veins is NE-SW.
- General dip of ore veins 20 – 90° towards NW. Most of them have dip of around 60°.
- Length of veins is from 50 to 100m, max. up to 300m. Thickness 0,2 to 3m (max. 9m). Only weak post ore tectonic displacement.
- Eastern structure ore body - several veins also in NW-SE direction.
- Disseminated - veinlet impregnation (stockwerk) mineralisation is located between the main ore vein system.

“Suplja stijena” type ore veins characteristics



- Contacts of massive sulphide ore veins with the host rock is mostly sharp.
- In some parts of the mine soft chlorite clay envelopes on the contact of ore veins with the host rock were the cause of geomechanical instability for the underground mining and left in situ. Their thickness varies from few cm to 20cm (max. 50cm). They are **still available for open pit mining**.
- Contact of ore veins with the andesite host rock is often transitional with the set of thin tectonic fractures and joints filled with disseminated - veinlet impregnation (stockwerk) type of mineralisation. It is controlled by the tectonic fragmentation of the host rock - andesites.

Suplja stijena ore minerals

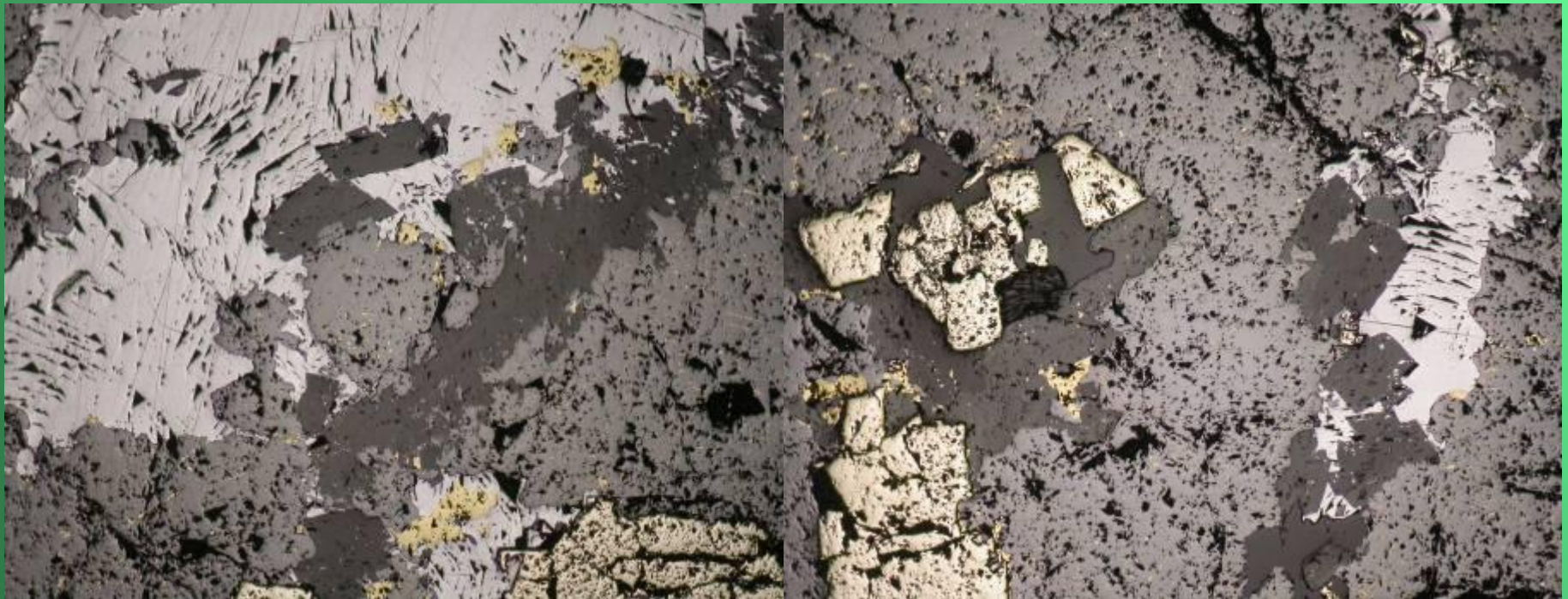


- Most common ore minerals:
 - 1 - pyrite, 2 - sphalerite, 3 - galena, 4 - chalcopyrite.
- Economic importance:
 - 1 - sphalerite, 2 - galena, 3 - chalcopyrite.
- Pyrite form 6,3-8,5% of the ore. It is important for the sulphuric acid production. We plan to use it for neutralisation of NaOH rich fluids of the Podgorica aluminium industry.
- Ore is very flotable! Flotational recovery is very high.

Most important minerals in the polished ore sections

Sphalerite (ZnS) - gray, galena (PbS) - white, chalcopyrite (CuFeS_2) – intensive yellow, and pyrite (FeS_2) bright yellow, gangue minerals: quartz and calcite are dark gray.

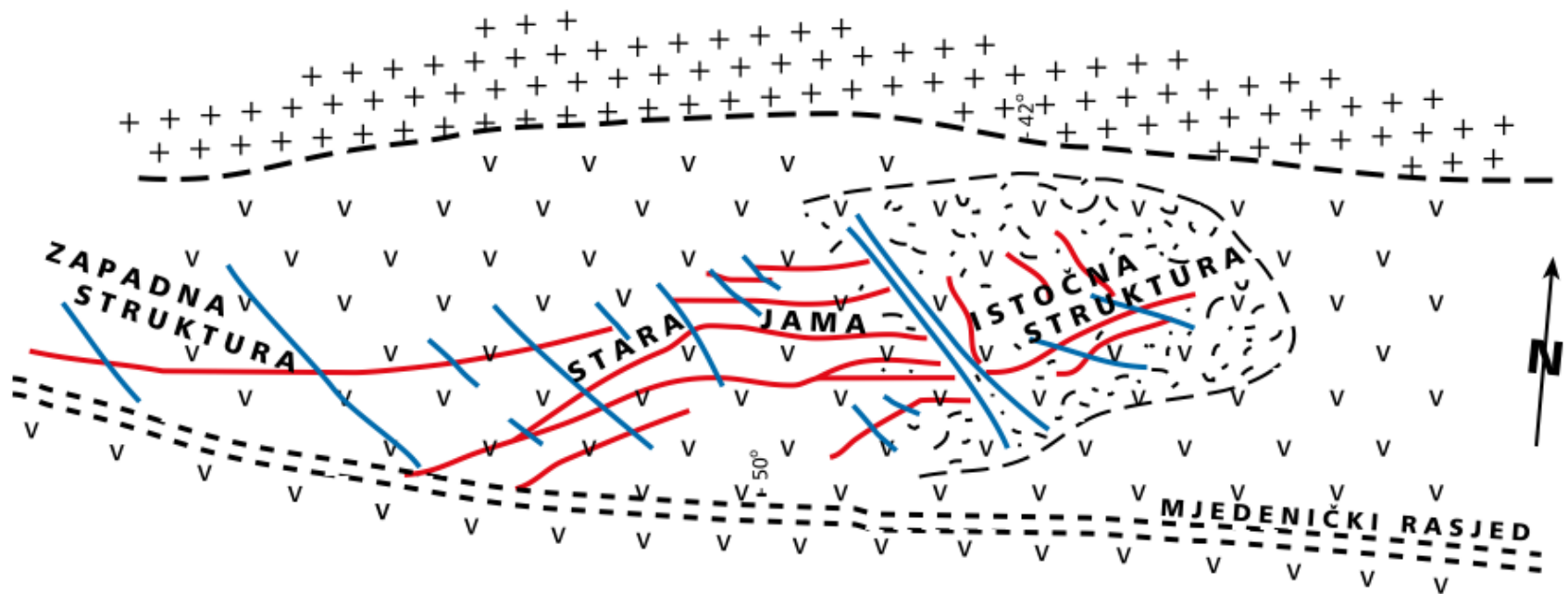
Length of the observed polished ore on photo is around 3 mm.



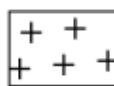
Šuplja stijena Zn, Pb, Cu (Ag, Au) orebody



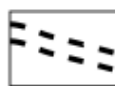
- Historically divided into three parts (from east towards west):
 - **Eastern Structure** (vein type of mineralisation, only partly mined out, disseminated ore type precisely defined to be mined out);
 - **Old mine** (vein type of mineralisation, mostly mined out, security pillars, and veins below 20cms thick still there, richest part of disseminated ore type in the central zone of the vein system – metal content was not systematically sampled);
 - **Western Structure** (almost all vein type of mineralisation is still there, clay envelopes (geomechanical instability) didn't allow underground mining, old adits accessible and exploration data available, continuation of exploration drilling possible).



LEGENDA:



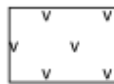
KREČNJAK



MJEDENIČKI
RASJED



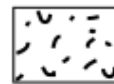
RUDNA
ŽICA



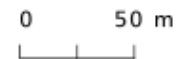
ANDEZIT



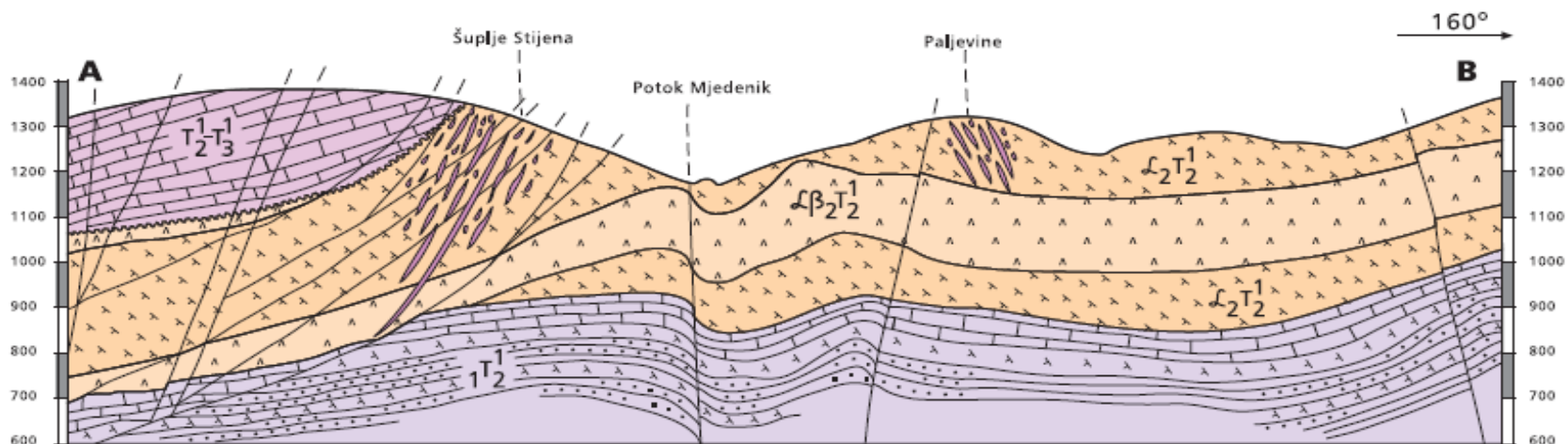
RASJED



DOKAZANA ŽILIČASTO-
IMPREG. MINERALIZACIJA



Geology map of the Horizon IV. of the “Šuplja Stijena” ore deposit. Lines in red: ore veins, lines in blue: faults. Mineralised rock andesite, covering sequence – limestone. “Istočna struktura” is the “Eastern Structure” ore body to be mined in an open pit in the 1st phase.



Geological cross section:

LEGENDA:

- 
slojeviti i bankoviti krečnjaci mjestimično konglomeratni i brečasti
- 
andezit - lava
- 
andezitobazalt - lava
- 
krečnjaci, mermerasti krečnjaci, peščari, gravljiti, škriljci sa jiskunom, ajevroliti, andeziti, andezitobazalti
- 
žično - impregnaciono orudnjenje

Translation of the legend:

Bedded and banded limestones, partly sedimentary limestone breccia

Andesitic lavas

Andesitic-basaltic lavas

Limestones, hydrothermally altered, limestones, sandstones, breccia, shale, siltstone, andesite, andesite-basalts

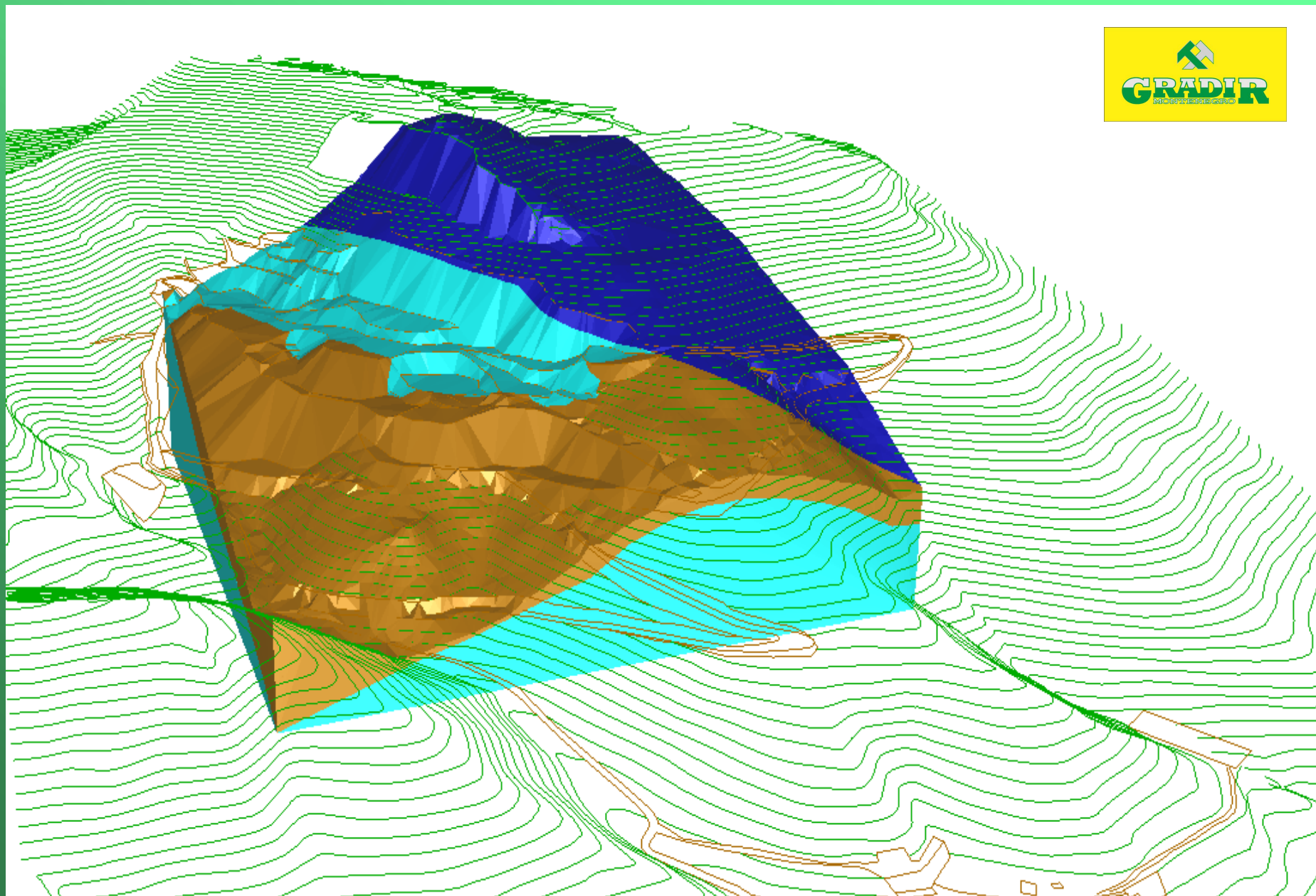
Vein type orebodies and parallel veinlet ore impregnation

GEOLOŠKI PROFIL A - B **1 : 10 000**

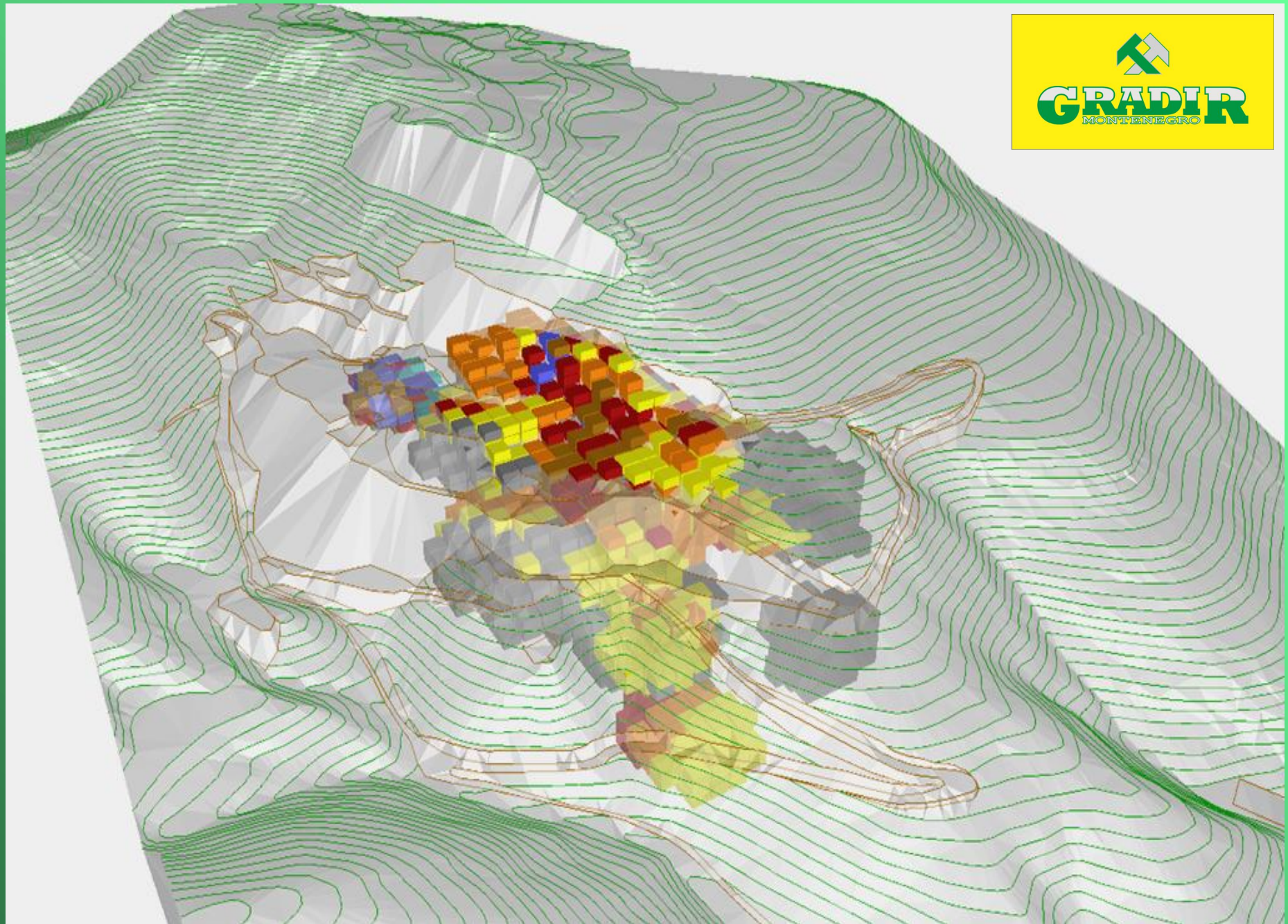
Profil, urađen prema geološkoj karti područja Šuplje stijene 1 : 10 000
 autora M. J. Zapromjotova, V. I. Zapromjotove, V. V. Ovječkina i J. S. Šihina (1980 g.)

Uradio: M. Čepić, dipl. ing. geol.





Lithological 3D model of the “Eastern Structure” ore body: dark blue – limestone, cyan – andesite, brown – oxidised andesite.



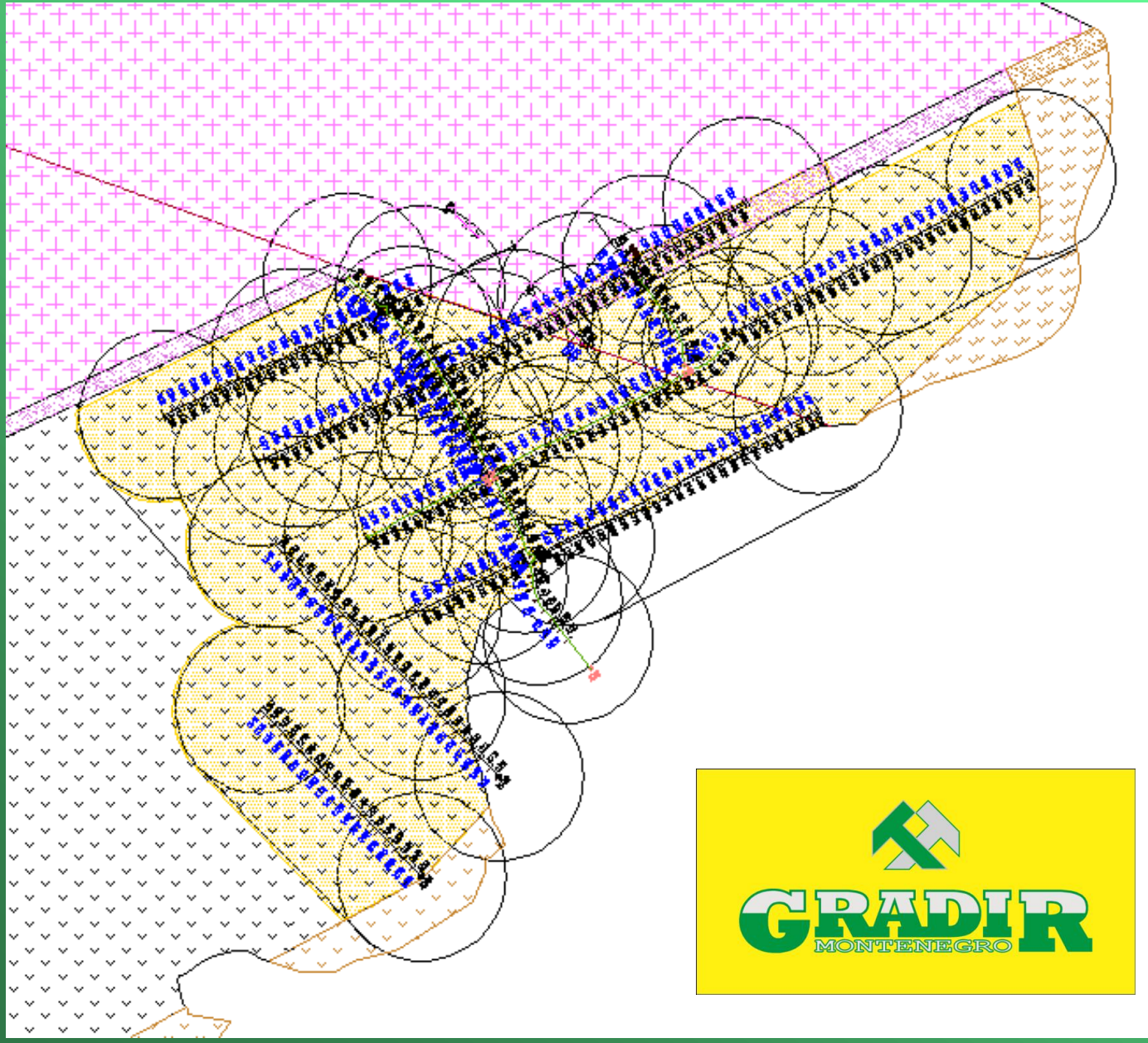
Spatial model of the mineralised ore blocks 20x20x10 m for the Eastern orebody.

Genetic interpretation of the Suplja stijena type ore deposits



- Source of magmatic ore fluids are **postvolcanic intrusions of diorite**.
- Open fractures within 200 to 500metres thick andesite rocks succession were filled with Zn, Pb, Cu ore minerals in Ladinian (Middle Triassic).
- Hidrothermal vein and disseminated (stockwerk) mineralisation has been formed in the broad temperature interval. Most of ore minerals were deposited in the mesothermal temperature range from around 225°C to 300°C.

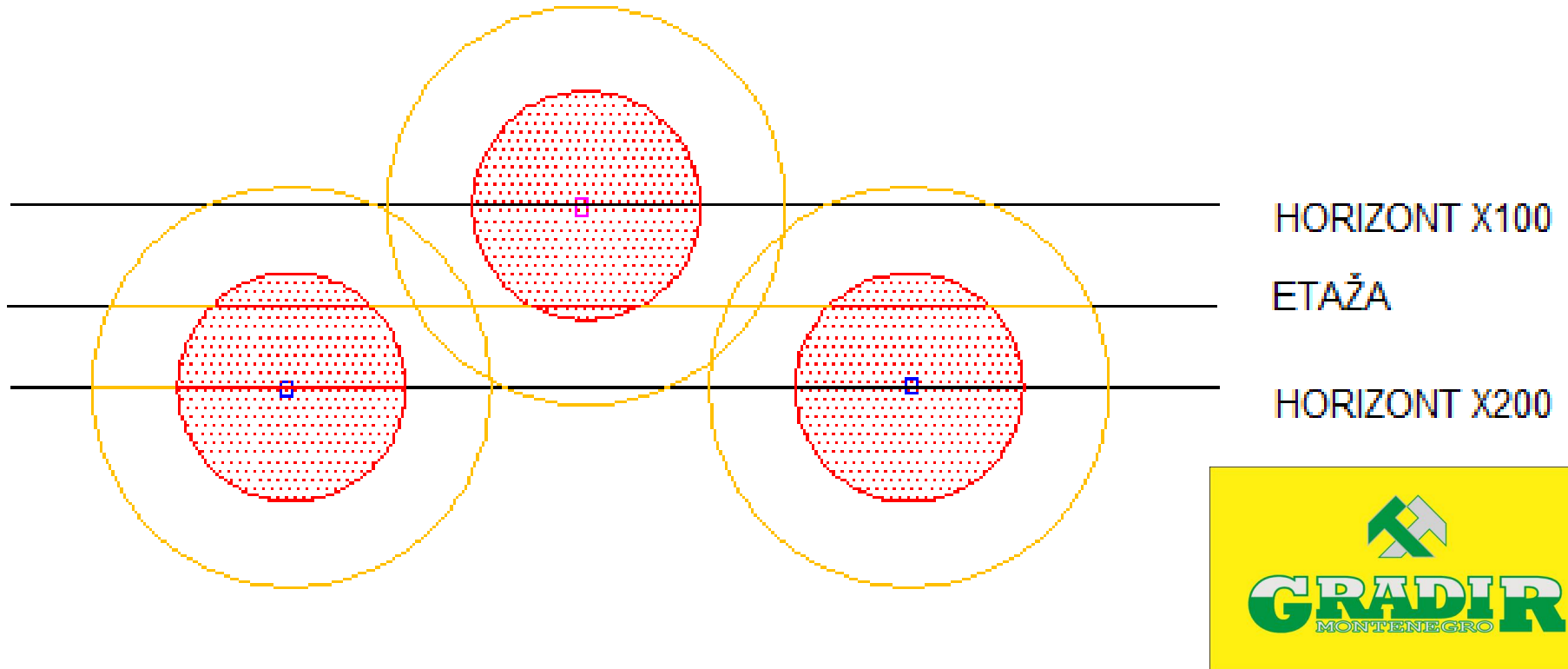
Ore reserves estimation study



Demonstration of the geometric construction for C1 ore category borders (indicated ore reserves). To the C1 ore category belongs an area up to 35m from the source data. Constructed for the adit horizont 300 with respect to the geometry of sampling and ore bearing lithology.

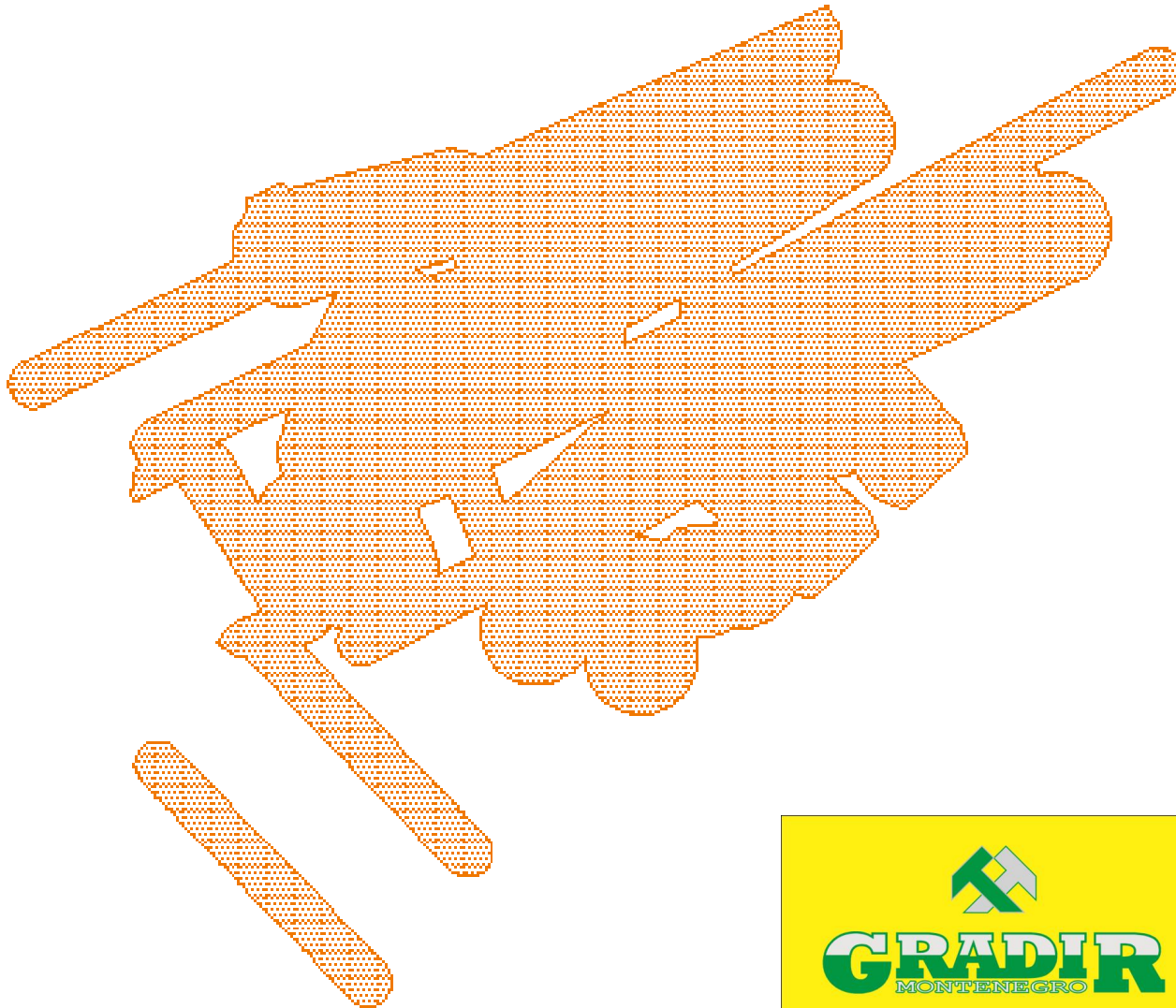


Ore reserves estimation study



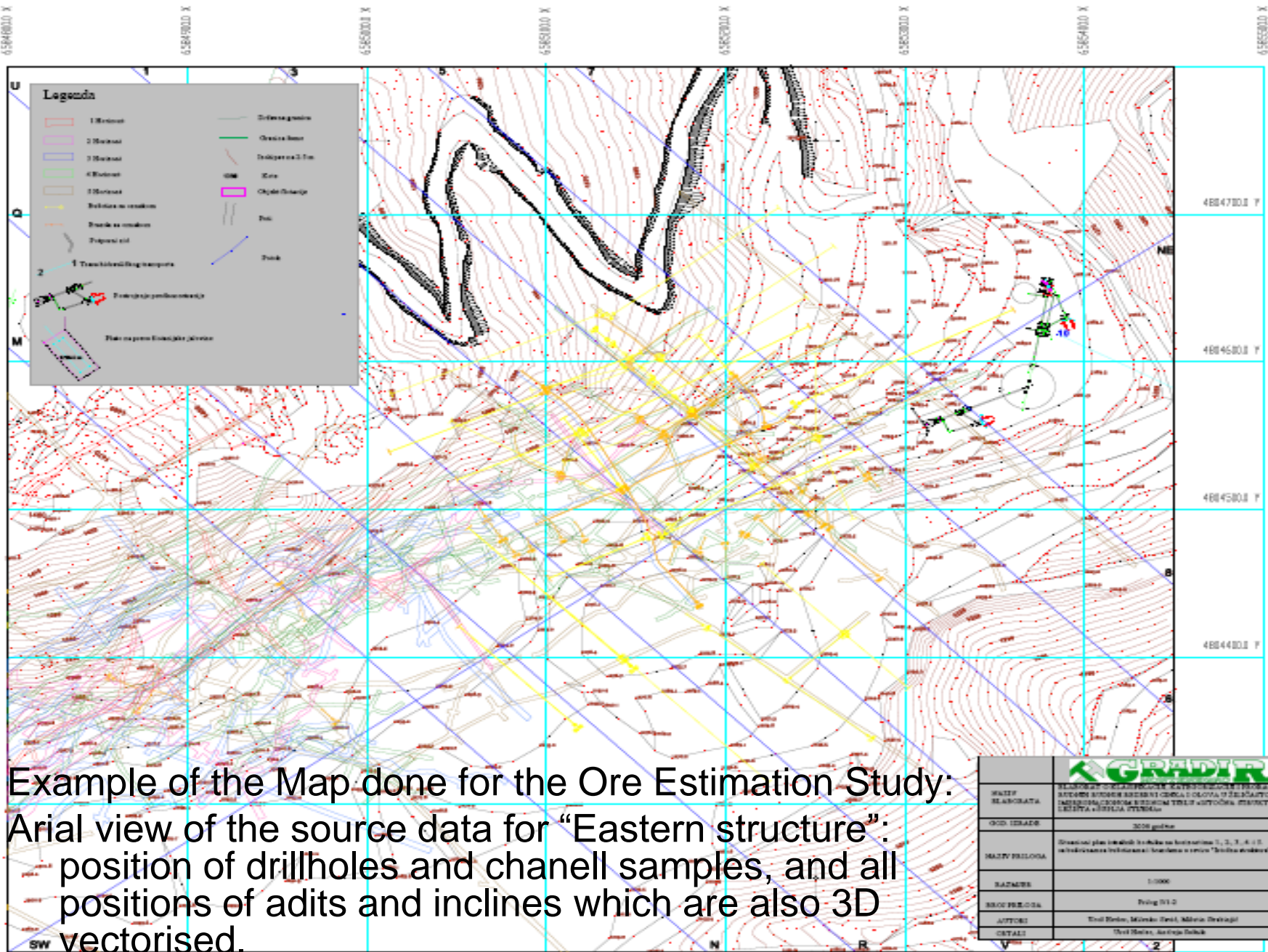
Demonstration of the ore category borders construction for the 10 metres open pit level etage in cross section – an area up to 20m for B category (measured) and an area from 20-35m from the source data for horizons 100 and 200.

Ore reserves estimation study



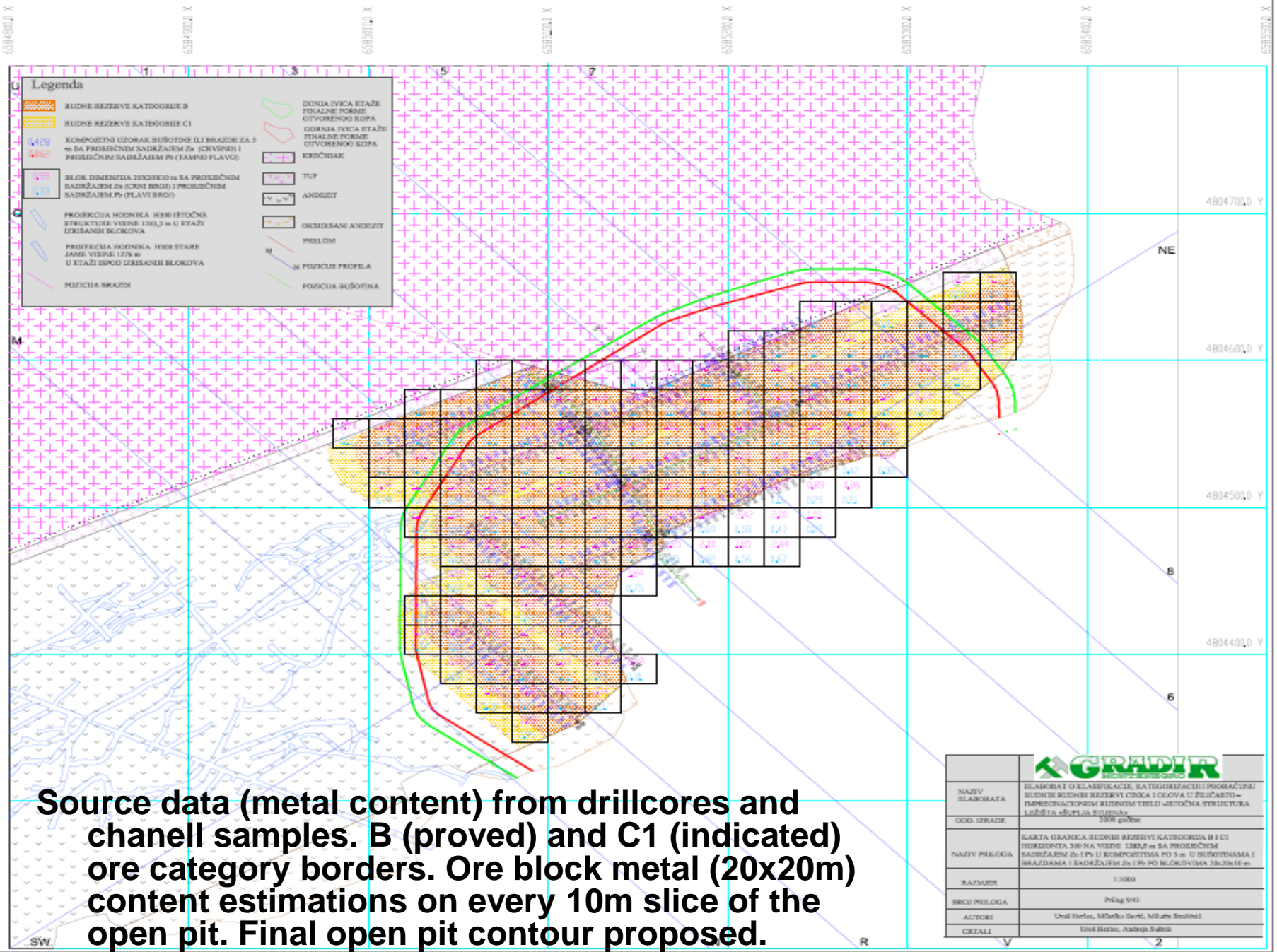
Demonstration of results for B ore category (measured) borders construction – an area up to 20m from the source data for the mining etage 1260 – 1270 between horizons 300 and 400 of the “Eastern Structure”.





Example of the Map done for the Ore Estimation Study:
 Arial view of the source data for “Eastern structure”:
 position of drillholes and chanell samples, and all
 positions of adits and inclines which are also 3D
 vectorised.

GRADIR	
NAZIV KARJERATA	IZLOKOVANJE I OČIŠĆENJE SIVORSKEGA ŽELJEZNOG RUDNIŠTA SISTEMOM AUTOMATIZIRANOG OČIŠĆAVANJA I OČIŠĆAVANJA INDUSTRIJALNOG OČIŠĆAVANJA TRAJNOG AUTOMATIZIRANOG SISTEMA U OBLASTI OČIŠĆAVANJA
ODR. IZDAJE	3000 godina
NAZIV PROJEKTA	Stručni plan izradbe i izvedbe na kontinentalu 1., 2., 3., 4. i 5. načinom izvedbe i izvedbenim sredstvima u okviru "Izvedbe izvedbe"
MAŠTAR	1:1000
SKICA PROJEKTA	Prilog N1.2
AUTORI	Trifunović, Miroslav, Stanić, Miroslav, Stanić
OSTALI	Trifunović, Miroslav, Stanić



Source data (metal content) from drillcores and channell samples. B (proved) and C1 (indicated) ore category borders. Ore block metal (20x20m) content estimations on every 10m slice of the open pit. Final open pit contour proposed.

	GRADIR
NAZIV ELABORATA	ELABORAT O KLASIFIKACIJI, KATEGORIZACIJI I PROJEKCIJI RUJNE REZERVE CINKA I OLOVA U ZILJASTO-IMPREGNACIONOM RUDNOM TIJELU - ISTOČNA STRUKTURA I OŠTA - 2D-PLAŠ KUTENJA
GOD. GRADE	2006. godine
NAZIV PRELOGA	KARTA GRANICA RUDNE REZERVE KATEGORIJA B I C1 (HORIZONTA 200 NA VISINI 1380,5 m SA PROSJEČNIM SADRŽAJEM Zn I Pb U KOMPOZITIMA PO 3 m U BUKOVINAMA I BRAZDAMA I SADRŽAJEM Zn I Pb PO BUKOVINAMA 20x20m E m)
NAZIV	1:5000
BRJUG PRELOGA	P-Eng 5/41
AUTORE	Uroš Horvat, Miroslav Šarić, Miroslav Šestaković
CRTALI	Uroš Horvat, Andreja Šušteršič

Estimated disseminated ore type Resources within the mining lease – consession contract field.

Ore deposit	Kateg.	Quantity	Content	of metal	%	Quantity	Of metal	%
Ore body		(t)	Pb (%)	Zn (%)	Cu (%)	Pb (%)	Zn (%)	Cu (%)
Eastern Structure	Inferred	20.00000	0,40	1,50	0,03	8000	32000	600
Old Mine	Indicated	1.800000	0,65	1,65	0,03	1170	32040	540
	Inferred	12.500000	0,60	1,50	0,03	75000	187500	3750
Western Structure	Inferred	4.000000	0,70	1,75	0,03	28000	70000	1200
Ribnik	Inferred	800000	0,90	1,95	0,04	7200	15600	320
Paljevine	Inferred	1.700000	0,30	1,00	0,40	5100	18700	680
Durdeva vode	Inferred	5.000000	0,40	1,85	0,04	20000	92500	2000
Summary	Indicated	1.800000	0,65	1,65	0,03	1170	32040	540
	Inferred	26.000000	0,53	1,60	0,03	137270	416300	8550
	Indicated + Inferred	27.800000	0,50	1,61	0,03	138440	448140	9093

Open pit design

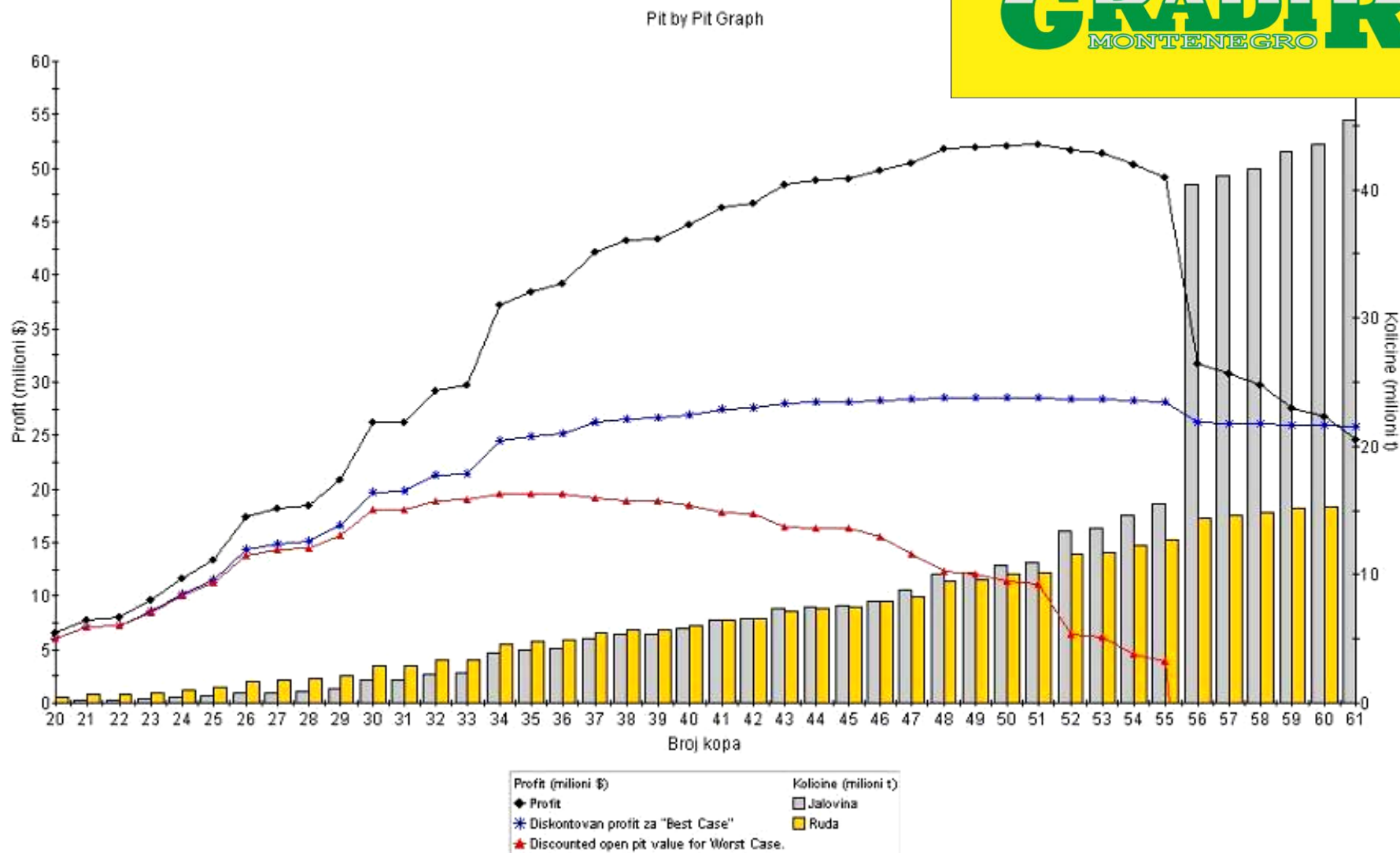


The Starting data:

Etage height : 10 m

General slope angle: 38° (in andesite)
50° (in limestone)

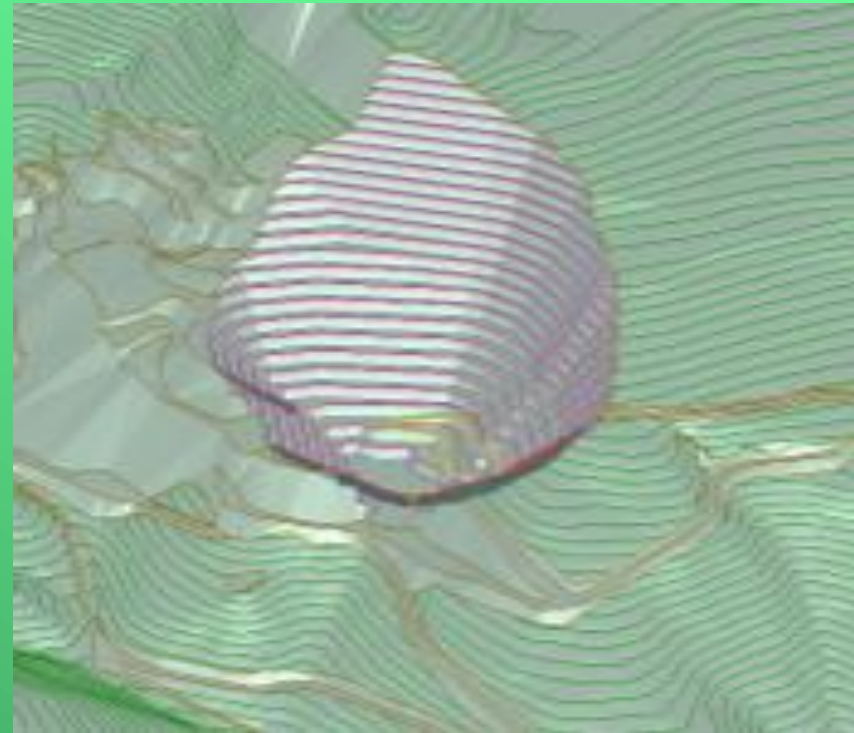
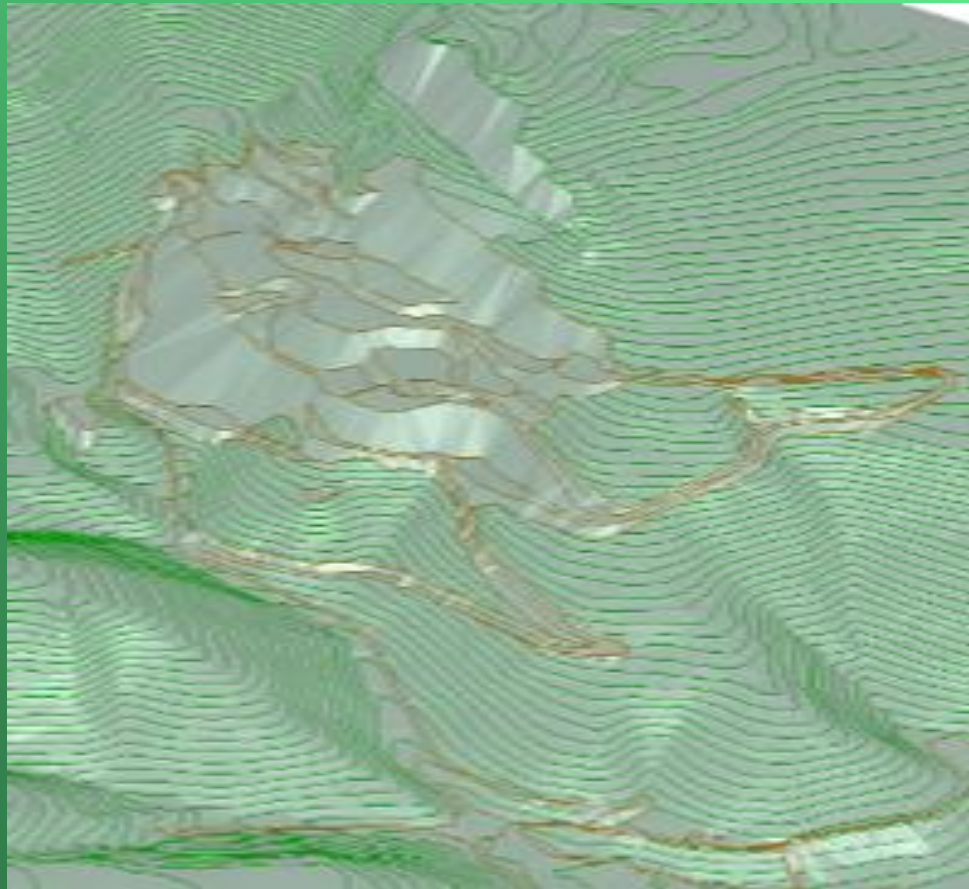
Open pit design



Profit calculation for 61 variations of the Open pit design.

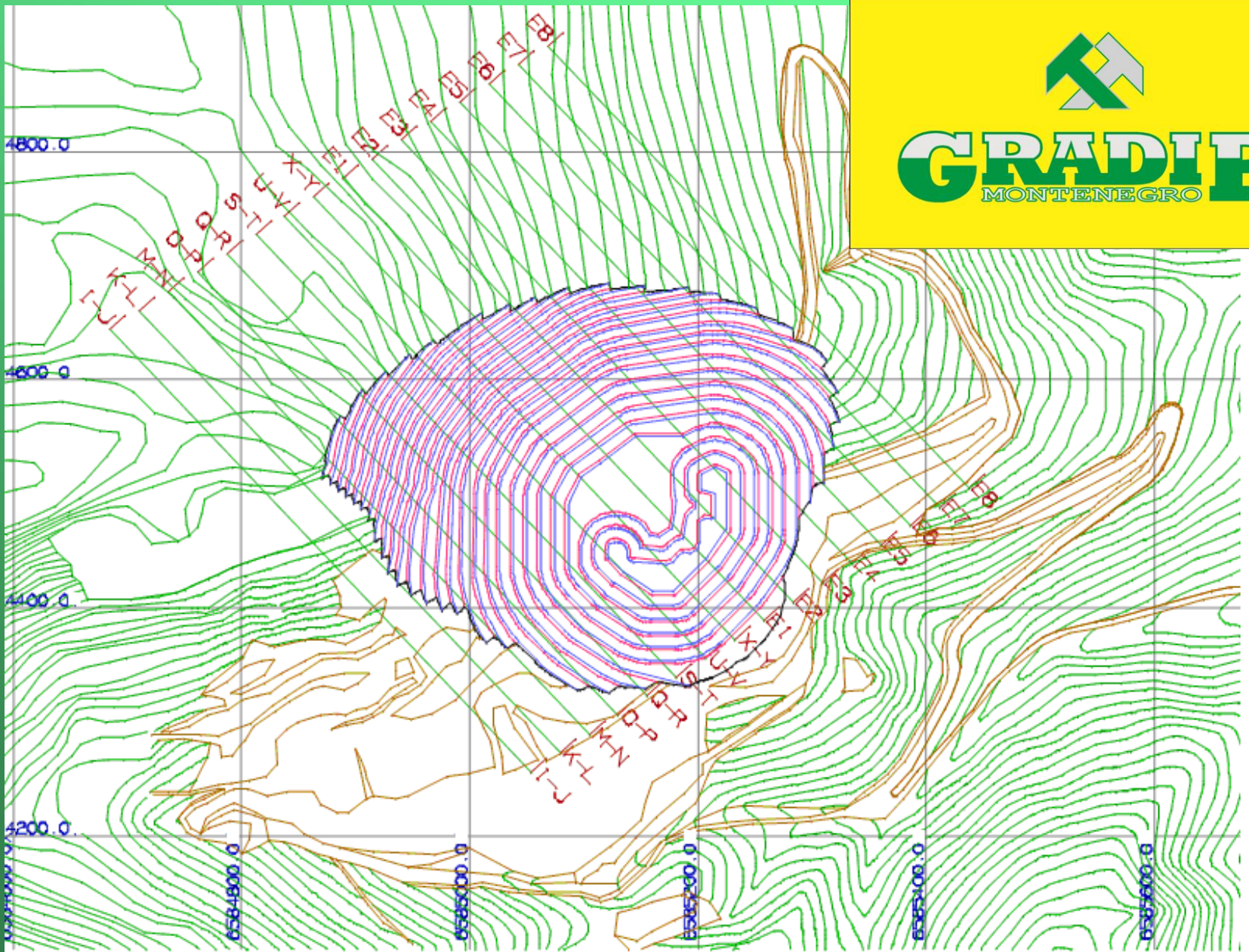


Eastern Structure Orebody Open pit 8,500.000 t of Zn+Pb(Ag) ore



Situation from the year
2000. to early spring 2008.

The planned final form of the
“Eastern Structure” ore body.



Ariel view of the optimal open pit design.

Environmental issues

- Modern process of flotation without the use of cyanide.
- Up to date flotation gangue depony.
- Acid mine drainage from old adits and flotation gangue – tailings depony will be treated – neutralised with the limestone aggregate and precipitated mud with heavy toxic metals separately deposited.
- Use of ISO standards for the control of toxic heavy metals contamination is obligatory, and we do not expect any problems.



Main Exploration Targets Redefined

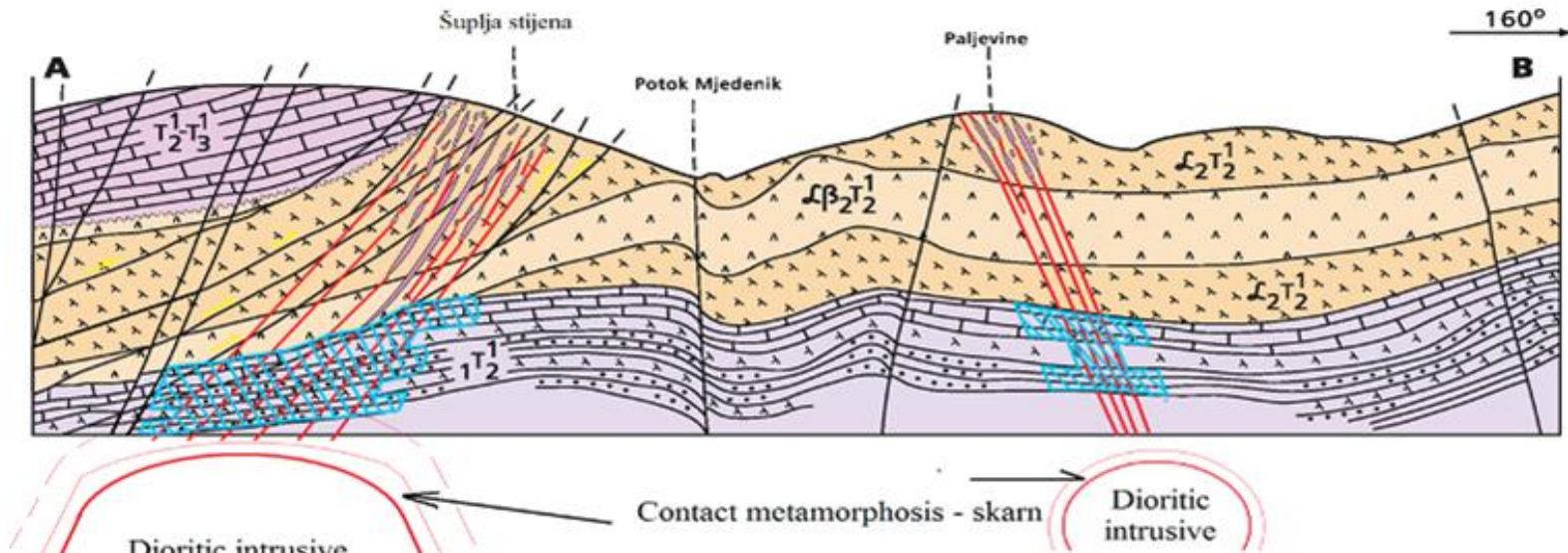


Main exploration targets from 1948-1987 were massive sulphide ore veins (for underground mining).

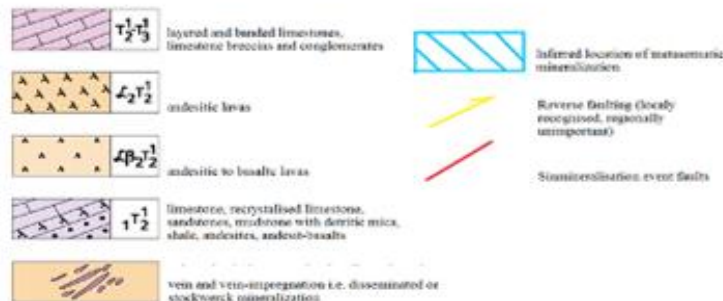
Since 1987 exploration target are disseminated vein impregnated (stockwerk) type mineral deposits (for open pit mining) due to low mining costs.

Experiences of the Chief geologist on the field of Mineral deposit studies and detailed study of the regional lithological succession of the ore field gave an idea and opportunity **to future exploration for a metasomatic and/or skarn type massive sulphide ore deposits** within the Anisian limestone just below the andesite succession in extension of the vein type mineralisation and already mined out vein ore type system of Suplja stijena. Future investment needed for exploration of this type ore bodies is around **5.000.000 EUR**.

Most Important Future Exploration Targets will be Metasomatic and/or Skarn Type Ore Deposits



LEGEND:



PROFIL A - B 1 : 10 000

Profile based on the Geological map of the Šuplja stijena mine 1:10.000

Authors of the geological map:
M. J. Zapromjotov, V. I. Zapromjotov,
V. V. Ovječkin, J. S. Šihin (1980)
Author of the original:
M. Čepić, dipl. ing. geol.

Author of the proposal:
Uroš Herić





Main factors of the success:

- The proved usefulness of DMS - Dense Media Separation - heavy liquid Pre-Concentration process for Šuplja stijena disseminated stockwerk type of mineralisation allow **cheap and efficient pre-beneficiation**.
- Modern open pit mining with **low costs** and several ore bodies allows **flexibility** for production of ores with lower metal content and **fast respond** to the metal price.
- **Best metal recovery** will be achieved with up-to-date “MetsoMinerals” Pre-concentration and ore Flotation plants.
- **High quality concentrate with no “nasties”**, and **Ag credits** (in Pb concentrate) + **Au credits** (in Zn concentrate).
- **Great exploration potential** within the mining lease field and in the area of Šuplja stijena ore field around.
- Extensive geological archive of the previous exploration.



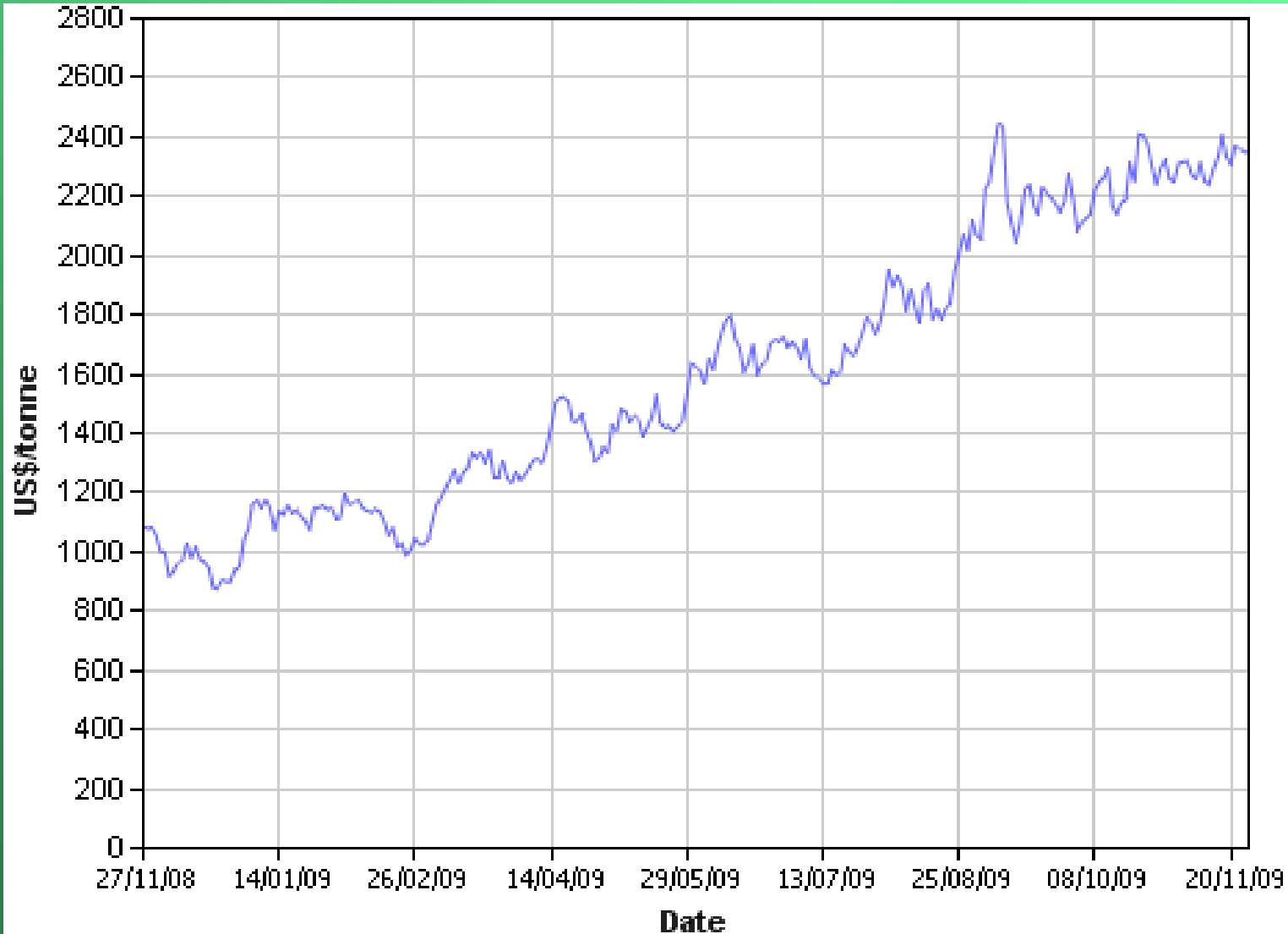
The most important factor of the success

- World metal market price
- The cut-off grade of the Šuplja stijena ore (Zn+Pb) is 0,75% at recent prices.
- The planned expected metal content for the first three years of production is 3,5% (Zn+Pb).
- The world metal price which is the limit for profitable production is 1500US\$/ tonne of Zn or Pb metal.

Zinc price - last year



Lead price - last year



Silver price - last year

1 Year Silver Price in USD/oz

Last Close: 18.82

High: 18.82 Low: 9.30 ▲ 8.51 82.49%



goldprice.org

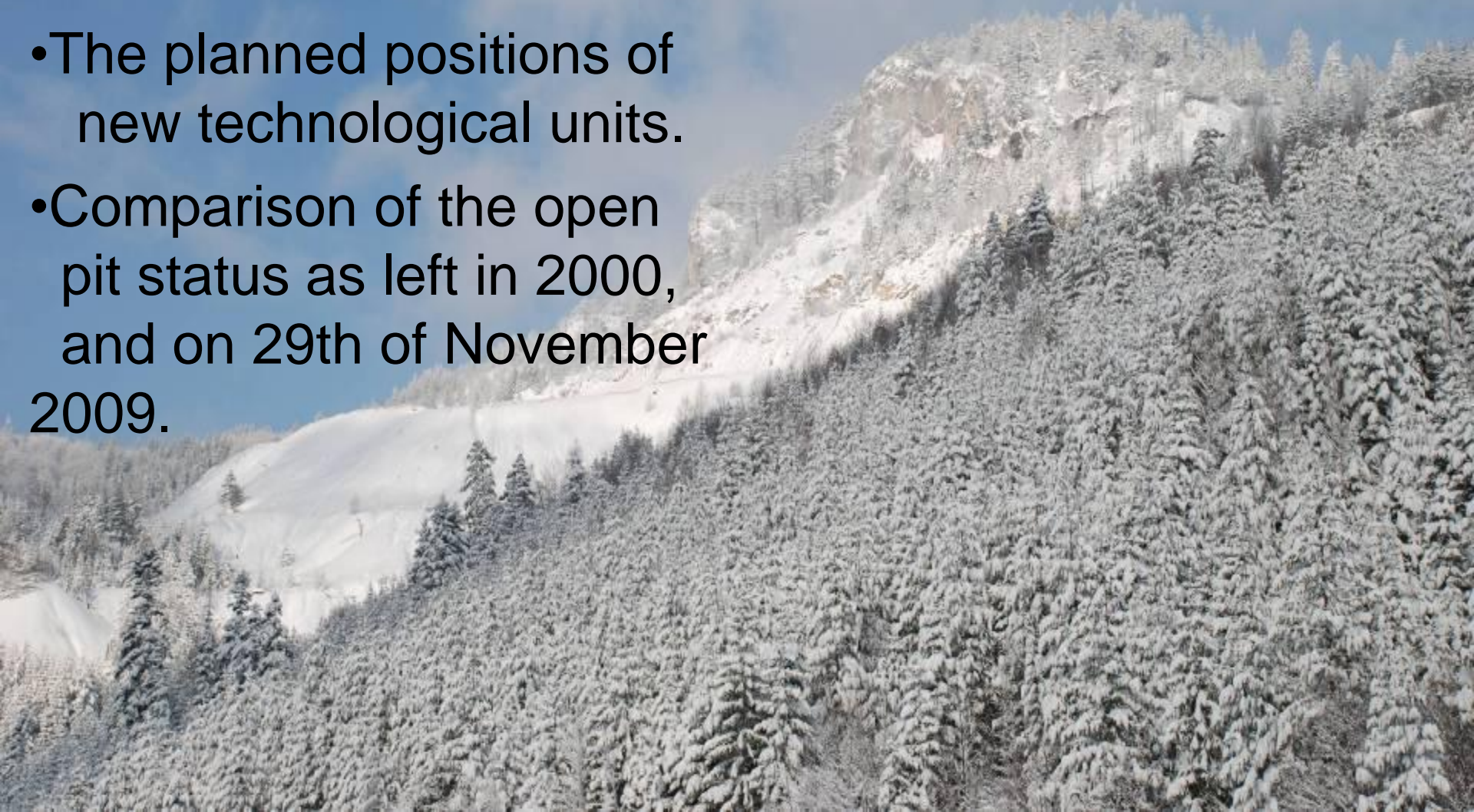
Thursday, November 26, 2009

- Big importance of the **growing demand for metals** from China and India.
- **Recovery of the economic growth** of the Western World will give rise for their demand for metals, too.
- Sustainable production of cars include the use of zinc **galvanised steel sheets**.
- Electric scutters and solar panels electricity production need **lead batteries for storage**.

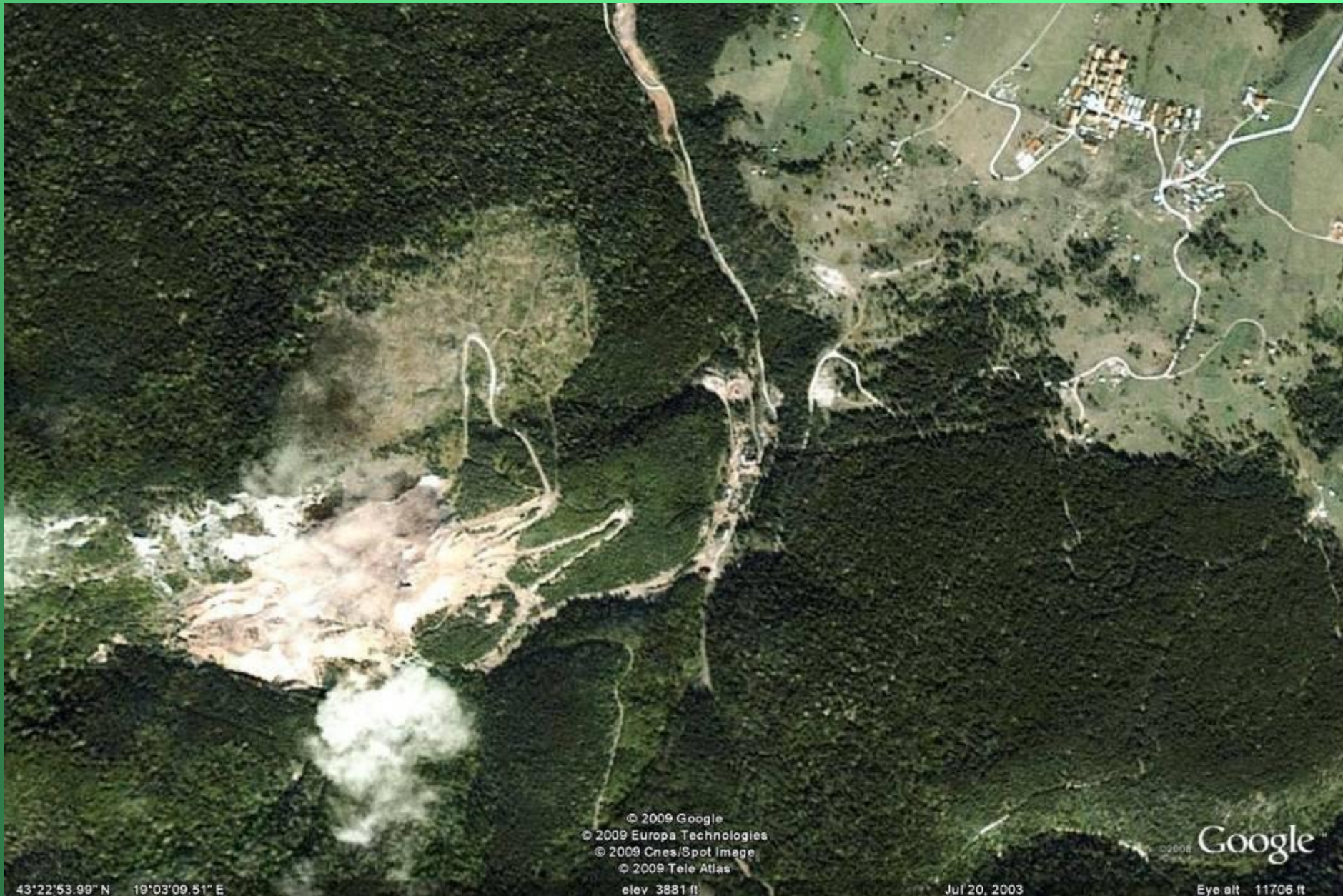
Technical Details and Visual Presentation of the Open Pit “Suplja stijena”



- The planned positions of new technological units.
- Comparison of the open pit status as left in 2000, and on 29th of November 2009.



Situation as left in the year 2000 to early spring 2008.



© 2009 Google
© 2009 Europa Technologies
© 2009 Cnes/Spot Image
© 2009 Tele Atlas

elev 3881 ft

Jul 20, 2003

Google

Eye alt 11706 ft

43°22'53.99" N 19°03'09.51" E

Situation as left in the year 2000 to early spring 2008.



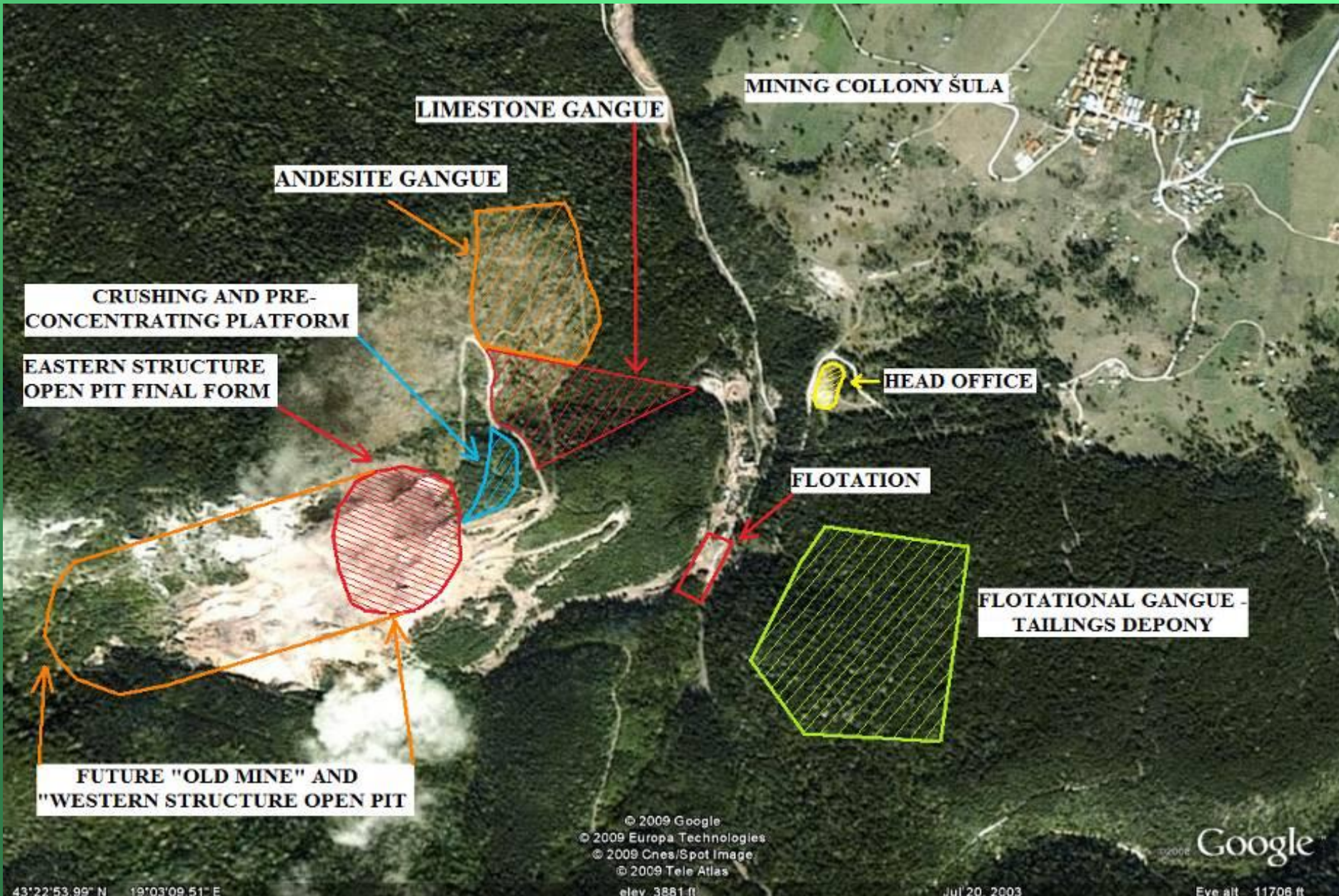
Recent situation above “Old Mine” west of the planned
“Eastern Structure” open pit.



GRADIR
MONTENEGRO

04/13/2009

Planned Position of New Technological Units from Early Spring 2009.



Position of New Tehnological Units



Open pit position:



Open pit position:



Open pit position:





16.07.2008



16.07.2008

NIT



16 07. 2008

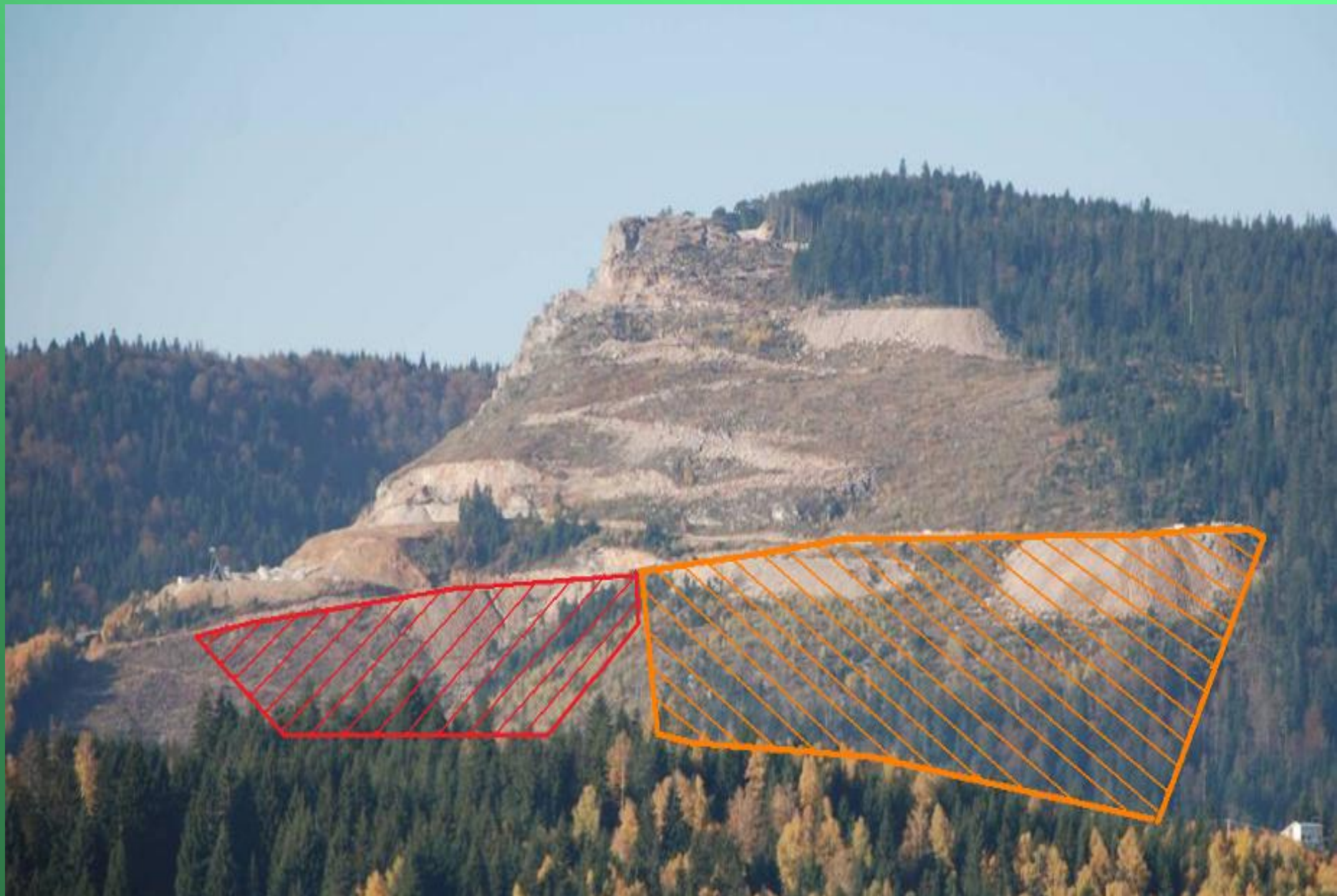
Early spring 2008 status:



Status of limestone hanging wall moving works



Status: left – limestone depony, right – andesite gangue depony .



Crushing and Heavy Liquid Pre-Concentration Platform Detail Plan

SITUACIONI PLAN

P.K. Suplja stijena - istočni deo



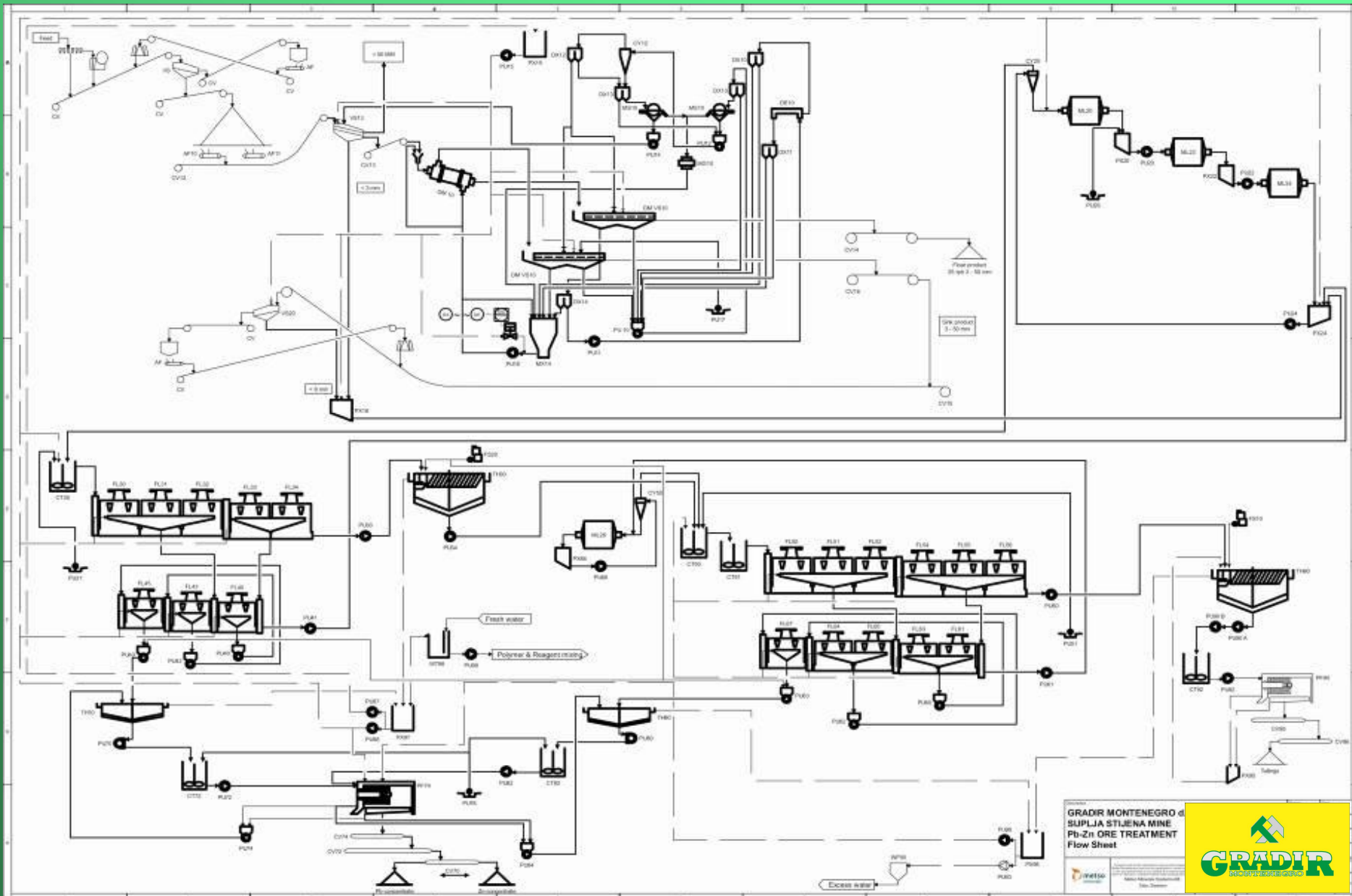
Crushers, Siever and Pre-concentration Platform, April 2008.



Crushers, Siever and Pre-concentration Platform, in April 2009.



General Technology Plan: Crushing, Sieving, Pre-Concentration, Milling, and Flotation.



- **Primary and Secondary
Crushing and Sieving**



- **Primary and Secondary
Crushing and Sieving**



- **Primary and Secondary
Crushing and Sieving**



Sieving



Crushers, Siever and Pre-concentration Platform, recent situation.



Crushers, Siever and Pre-concentration Platform, recent situation.



Four Mills by the Flotation



04/13/2009

Four Mills by the Flotation



Recent situation



Recent situation



Planned Position of the New Flotation Below the Open Pit, March 2008.



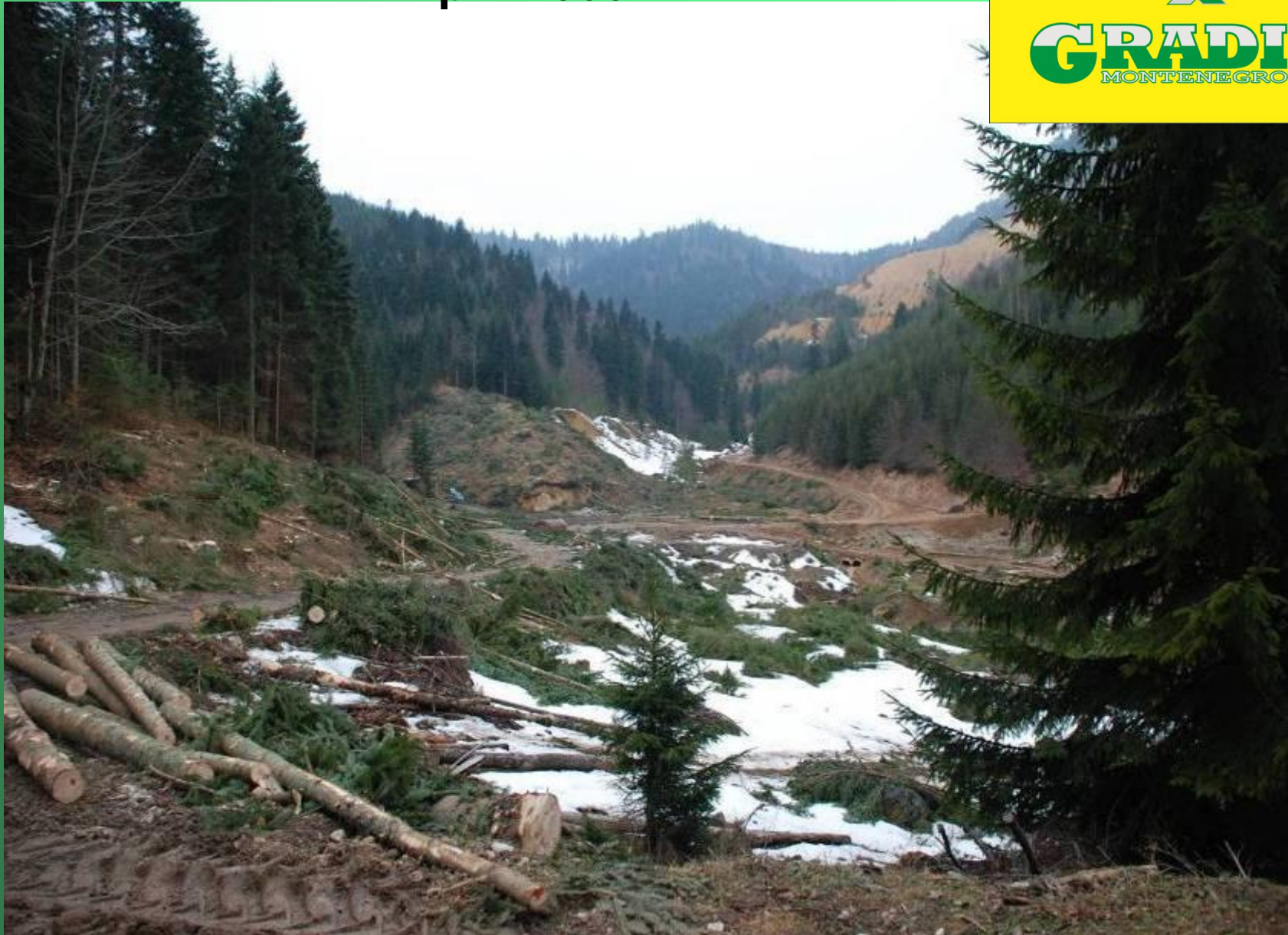




Planned Position of the New Flotation, March 2008



Planned Position of the New Flotation, April 2008.



Planned Position of the New Flotation, May 2008.



Planned Position of the New Flotation, June 2008.



Planned position of the new Flotation, August 2008.



Planned position of the new Flotation, August 2008.



Planned position of the new Flotation September 2008



Planned Position of the New Flotation, April 2009



Planned Position of the New Flotation, recent situation



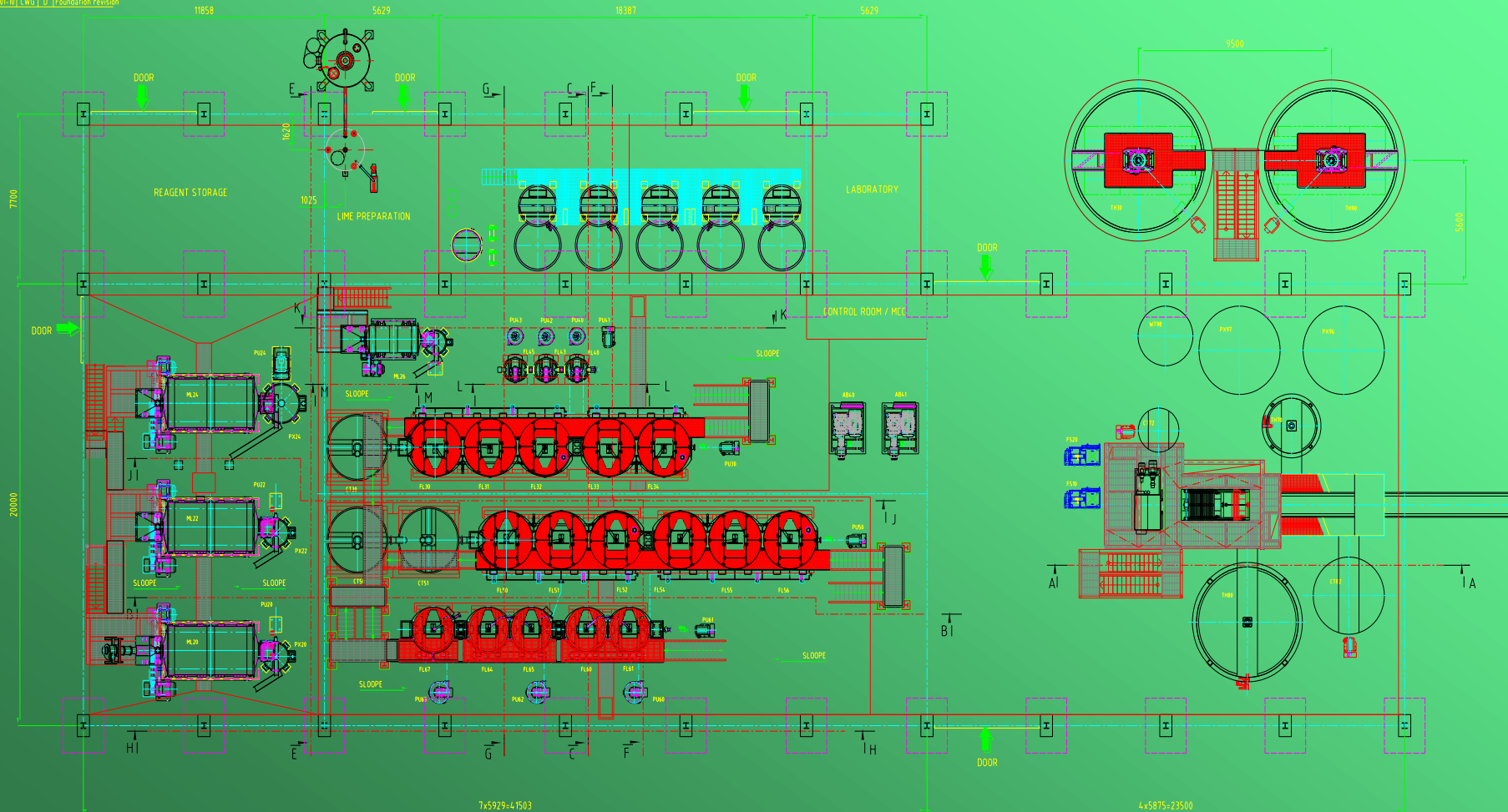
Planned Position of the New Flotation, recent situation





Plan of the New Flotation – Project and All Equipement Done by MetsoMinerals

Date	Obj.	Rev.	Change description
2007-06-01	CWG	A	Flotation rev.
2007-06-28	CWG	B	Filter rev. building -10 m
2007-09-03	CWG	C	General revision
2008-01-10	CWG	D	Foundation revision



Flotational gangue – tailings depony



Flotational Gangue – Tailings Depony



GRADIR
MONTENEGRO



04/13/2009



Head Office Position – May 2008



Head Office Position – July 2008

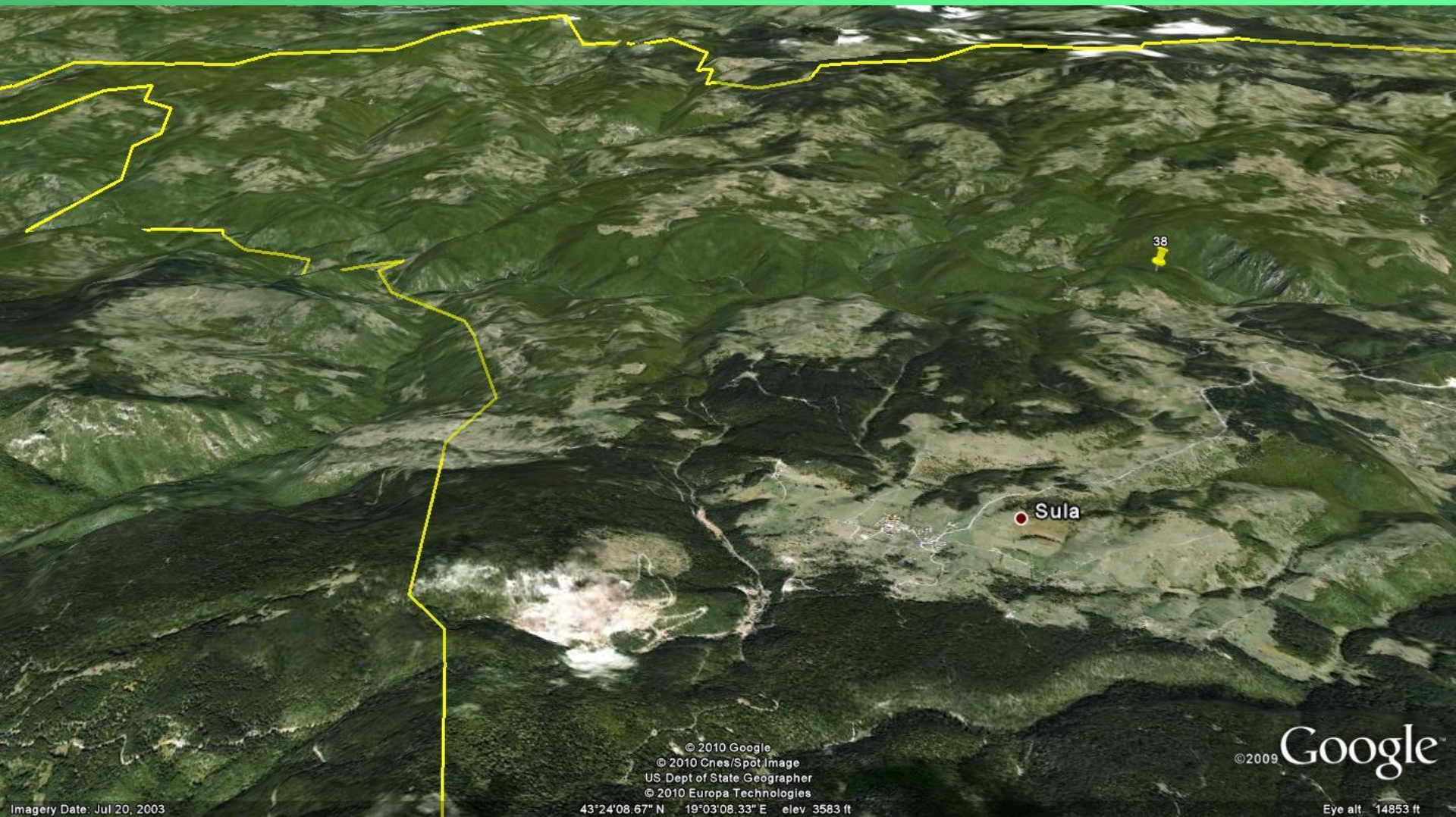


Head Office – recently



Old Settlement for Miners - Šula





© 2010 Google
© 2010 Cnes/Spot Image
US Dept of State Geographer
© 2010 Europa Technologies

© 2009 Google

43°24'08.67" N 19°03'08.33" E elev 3583 ft

Eye alt. 14853 ft

Imagery Date: Jul 20, 2003



38

Sula





RU
SUPLTA
STIJEHA



8001





















16.07.2008



16.07.2008



16.07.2008



















