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CORTAZ

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Property Name Cortez Gold Mines; Lander Cty., NV Location S 19 T27 N.R. 48 E.

Published Reserves: Oxide Ore ) 3,500,000 tons mined out

Carbonaceous Ore )

Annual Production: Mill (TPY) )

Leach (TPY) )

1. Regional Geology (10 mile radius)

A. Structure; faulting, folding, age: Roberts Mtn. thrust fault (Dev.-Miss.);

Cortez and Crescent Valley faults (Basin and Range normal faults), folding widespread.

B. Intrusives; age, composition, geometry, alterations,

mineralization: (1) Mill Canyon stock and associated dikes; 147-153 m.y. (Jurassic); Granitoid biotite quartz monzonite with local granodiorite border zone with Alaskite, granodiorite and augite syenite dikes; contact aureole alteration; (2) Quartz porphyry dikes; 34.5-37.3 m.y. (Oligocene); local jasperoid.

C. Volcanics; age, composition, type (flow, tuff, etc.),

proximity, depth of mineralization relative to pre-volcanic

surface: (1) Caetano Tuff; 30.6-35.5 m.y. (Oligocene); rhyolite welded tuff; 2 miles SW; (2) Basaltic andesite; 16.3 m.y. (Miocene); flows; 6 miles E.; (3) Rhyolite, 14.5-15.3 m.y. (Miocene); flows and plugs, 6 miles E.



D. Basement lithology; stratigraphic section - thickness and

lithology, known or inferred basement lithology:

<u>Age</u>	<u>Upper Plate</u>	<u>Lower Plate</u>
<u>Devonian</u>	<u>Slaven Chert</u>	<u>Wenban Limestone</u>
		<u>Roberts Mtn. Limestone</u>
<u>Silurian</u>	<u>Four Mile Canyon Fm.</u>	
	<u>Valmy Fm.</u>	<u>Hanson Creek Fm.</u>
<u>Ordovician</u>	<u>Vinini Fm.</u>	<u>Eureka Quartzite</u>
<u>Cambrian</u>		<u>Hamburg Dolomite</u>

2. Local Geology (1 mile radius)

A. Host rock(s); age, lithology, porosity, permeability, pyrite

(syngenetic) and organic content: (1) Roberts Mountain limestone;

Silurian; thinly laminated, dolomitic to calcareous siltstone and  
silty limestone; moderate pyrite; locally carbonaceous. (2) (Minor)

Wenban limestone; Devonian; locally carbonaceous limestone; some  
primary pyrite.

B. Structure; folding, faulting, control on mineralization,

age(s): Basin and Range, tensional-fault ground preparation in zone  
beneath plane of movement of Roberts Mountains thrust, (folding common  
on large scale).

C. Igneous rocks; type, chemistry, geometry, age and relationship

to mineralization: (1) Mill Canyon stock; qtz. monz.-granodiorite;

1/2 mile E.; 147-153 m.y. (Jurassic); (2) Rhyolite-quartz porphyry

dike swarm (along trend of mineralization in pit), 34.5-37.3 m.y.

(Oligocene)



3. Geochemistry/Alteration

A. Major elements; % addition/depletion  $MgO$ ,  $K_2O$ ,  $Al_2O_3$ ,  $SiO_2$ , minerals, spatial/temporal relationship to gold mineralization: Au mineralization associated with silicification, and decreased carbon, decreased carbonate and decreased magnesia.

B. Minor elements; value range in ppm Hg, As, Sb, W, Ba, Ag, Cu, Pb, Zn or other, mineralogy, zoning with ore: \_\_\_\_\_

Au associated with: As, Hg, Sb, W

As = 200-900 ppm

Hg 0.5-10 ppm

Sb 5-20 ppm

W 10-50 ppm

C. Principal alteration characterists: bleaching, addition of silica, decrease in carbon and carbonate, locally abundant jasperoid.

D. Organic carbon; evidence of remobilization, carbon and gold relationships, nature of carbon oxidation, carbon compounds, metallurgical problems: Bleached appearance, low carbon suggests widespread hydrothermal removal; Au not with carbon, generally oxide ore types.

(cont.)



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- E. Silicification; spatial/temporal relation to ore, % jasperoid and % ore in main mineralized area, geochemistry of jasperoid (trace elements): Jasperoid silicification locally abundant in porous breccia zones within ore body.
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#### 4. Mineralization

- A. Nature of gold; size, distribution, associated carbon, pyrite or clay, types of ore: 0.5-10 micron size (rare to 0.1 mm.); not associated with carbon; definitely associated with pyrite and arsenopyrite.
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B. Speculation as to composition; temperature and pressure of hydrothermal fluid and mechanism of gold precipitation: 200° C., 25 bars; near surface deposition within zone of boiling due to lower temperature and pressure, reactions with carbonate host and possible fixation by sedimentary hydrocarbon.

C. Fluid inclusion data: None

D. Possible sources of gold: Magmatic source related to quartz porphyry dikes and/or leached from underlying sediments.



## 5. History of Discovery

Geochemical prospecting by USGS followed by drilling and sampling.

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