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Item 52

BOREALIS MINE, NEVADA

Production: Reserves of 2 million tons at average grade of .06 Au/T. Dimensions of orebody are 1000' x 600' x 80' deep.

Type: Epithermal breccia fill and hot spring apron.

Host Rocks: Tertiary andesite of 18-19 my. This is the host rock for mineralization at Comstock, Aurora and Bodie.
The deposit occurs at the intersection of probable NW and NE structures.
The hot springs vents and sinters occur near the surface of the original hill.
The entire deposit appears to be the hot springs apron on top of the andesite.

Ore Age: The main orebody is a siliceous, partly oxidized quartz pyrite breccia. An alunite date of 4 my. has been given.

Mineralogy: Au is very fine grained and occurs as 1 micron particles some in clusters to 5 microns across. Au: Ag = 1:2.
Ore is present to the redox zone at about 200' from top of hill. Below this zone grade drops to zero.

Alteration: Propylitic, argillic and advanced argillic assemblages occur. Specific assemblages noted were kaolinite + alunite+ hematite and barite+ montmorillonite.
There is also surficial alteration by H_2S (native S).
Siliceous sinter occurs at surface. This carries Au and Hg.
The main brecciated zone appears to be rimmed by a 5' thick highly siliceous "rind". This was suggested to have flowed out as microcrystalline silica.

BOREALIS MINE, NEVADA

Top bench, sinter and oxidised siliceous vein to right of vein

Top bench, ferruginous mineralized breccia

breccia with oxidised zone around pyritized breccia.

TO: J. L. Walker

FROM: D. E. Ayres E. P. R.

SUBJECT: Nevada gold deposits field trip, March 1- 5, 1982.

This field trip was arranged by Fred Warnaars and Tony Greenish of the International Explorations Department. Max Boots of that department and Jean Lawler participated also. Visits were made and samples collected from the "Carlin-type" deposits at Cortez, Gold Acres and the Sterling Mine, a "porphyry" related deposit at Round Mountain, and an epithermal hot springs deposit at Borealis. Locations of these deposits are shown on the accompanying map.

Approximately 50 samples were collected, mainly from the Cortez, Sterling and Borealis deposits. These appear suitable for clay mineral and possibly fluid inclusion analysis. The Sterling mine, in view of its size, geological setting, ease of access and the interest shown by the staff, has potential for research studies on Carlin-type mineralogy and alteration.

Dean Ayres

D. E. Ayres

10 March, 1982

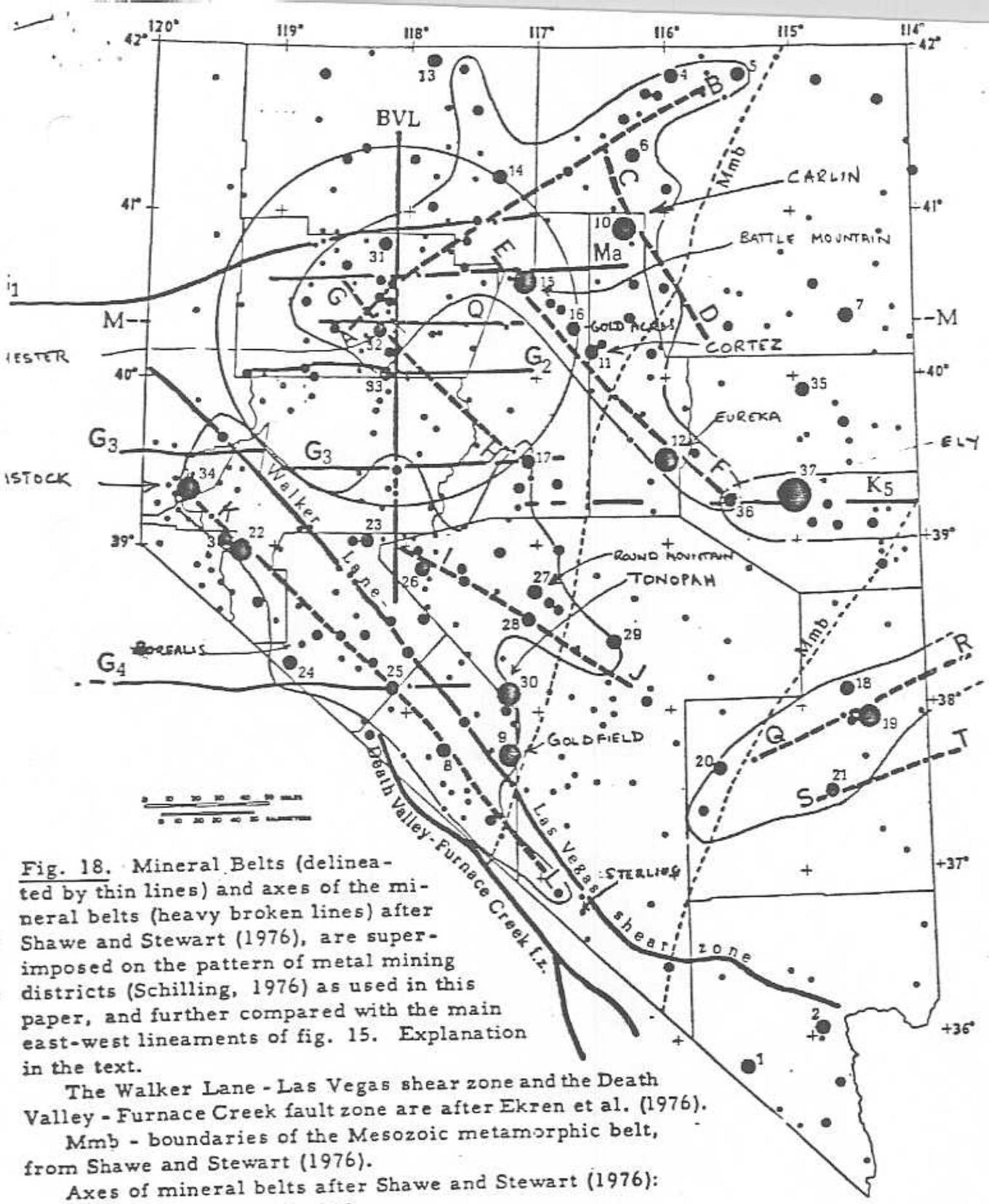

Fig. 18. Mineral Belts (delineated by thin lines) and axes of the mineral belts (heavy broken lines) after Shawe and Stewart (1976), are superimposed on the pattern of metal mining districts (Schilling, 1976) as used in this paper, and further compared with the main east-west lineaments of fig. 15. Explanation in the text.

The Walker Lane - Las Vegas shear zone and the Death Valley - Furnace Creek fault zone are after Ekren et al. (1976).

Mmb - boundaries of the Mesozoic metamorphic belt, from Shawe and Stewart (1976).

Axes of mineral belts after Shawe and Stewart (1976):

A - B : Shoshone - Jarbidge

(continued on next page)