

NEVADA MINERALS RECON COMPANY

Review of Gravity and Magnetic Data for the Cornucopia Area

by Roney C. Long

October 10, 2001

Introduction. The author has written several Private review papers on the subject of the Carlin-type gold deposit potential in Lower Plate carbonates in the area of the Tuscarora Volcanic Field. The author has now come into possession of detailed gravity and magnetic surveys for the area of the Cornucopia altered and mineralized area. This report is a review of those surveys, particularly as they relate to the Lower Plate Carlin style gold deposit potential. The most effective form of geophysics utilized in the Carlin Trend is probably the 3-D integrated gravity, magnetics, and resistivity as developed by Newmont. The processing of this data is proprietary to Newmont, and, all of these data sets are not available for Cornucopia. However, detailed gravity and magnetics have been made available to Nevada Minerals Recon Company, and these data will be discussed as they relate to Carlin type gold deposits in Lower Plate carbonates (reactive/favorable stratigraphy) at Cornucopia. Although the opinions expressed in this report are those of the author, and the author has experience in the interpretation of these types of data, the author was coached in the interpretation/application of these data relative to Carlin Type gold deposits by an ex-Newmont employee.

Favorable Data Responses. The gravity and magnetic data generated for examining Carlin Type gold deposit potential are each intended to depict three general geologic features. Gravity is intended to show areas of the lower plate that are relatively near the surface, where drill search depths are more reasonable. The gravity data is also intended to depict sedimentary basement blocks, with block margins likely representing structures, and the raised blocks being more favorable for interaction of mineralizing fluids due to the rise and ponding of the fluids in these blocks. The gravity data might show other structure of great extent, possibly representing significant structures. The magnetic data is intended to depict favorable structures, especially major through-going structures, which might be local or regional fluid conduits. The magnetic data also should show intrusive rock locations, usually as areas of higher magnetic susceptibility. The magnetic data might show altered areas, where a normal magnetic response pattern is interrupted by lower than expected responses, due to destruction of magnetic, or mafic minerals, by the effects of alteration.

The optimum combined gravity and magnetic signature for a Lower Plate Carlin Type gold deposit target would be: 1. A gravity high, with clearly defined block margins, 2. A gravity response comparable to other areas with known favorable/reactive carbonate horizons in the Lower Plate at reasonable search depths, 3. A magnetic signature of intrusive mass at depth, however, the Eocene magma responsible for Carlin Type gold

deposits has only moderate magnetic susceptibility, 4. A magnetic pattern indicative of through-going structures of regional extent, and 5. A magnetic pattern indicative of significant cross-fracturing. If these favorable features occur with a large alteration/mineralization system, with arsenic-gold anomalies, 42 to 36 my age, and observable sedimentary rocks known to occur above the favorable/reactive carbonate Lower Plate horizons, then a very attractive Carlin Type gold deposit target is clearly defined. Such is the case at Cornucopia.

Interpretation of Cornucopia Gravity and Magnetic Data. Annotated maps of Cornucopia geology, magnetics, and gravity are attached. The gravity survey map shows two large, prominent blocks with square sides (blocks 1 and 4), which are almost certainly fault-bounded blocks of the basement in upthrown positions. There are three other blocks (blocks 2, 3, and 5) that appear to be smaller versions of these upthrown blocks, again with generally square margins. These are probably smaller basement blocks that are upthrown, although some of them could be denser intrusive masses, like andesite plugs. Note that there is no sign of these potential andesite plugs at the surface. The gravity map also shows prominent structural directions to the northeast and northwest. The gravity map possibly shows the caldera margin as an area of moderate gravity gradient (on the processed gradient version of this gravity, which the author does not have, the caldera margin was a clear gravity gradient anomaly). These gravity results show detail within the general pattern of a regional gravity high as published by the USGS. Note the colored gravity map, with the annotated geology. The drill sites indicated are those for which there is a current 3809 Notice of Intent for drill operations. The site marked "14", is ideally located to test both alteration and gravity-indicated block 1. Interestingly enough, this is the drill hole which entered the Paleozoic basement, consisting of strongly altered quartz siltite of the Devonian Rodeo Creek, at a vertical depth of about 800 feet. There was "pushed" secondary carbon in the basement, and also variscite. Note that site "14" is on the north side of a large structure filled by one of the intra-mineral dikes. Based on geology, known basement position, and gravity this is the perfect place to locate an initial drill test. The Silurian-Devonian Roberts Mountain fm. would be expected to be 800 feet, based on other nearby sections (like Dip Creek) below the quartz siltite, or about 1,600 feet below current surface. This depth is identical to the depth of the West Leeville and Four Corners gold deposits discovered on the High Desert JV lands north of the original Carlin deposit. This depth agrees very well with the observed gravity values.

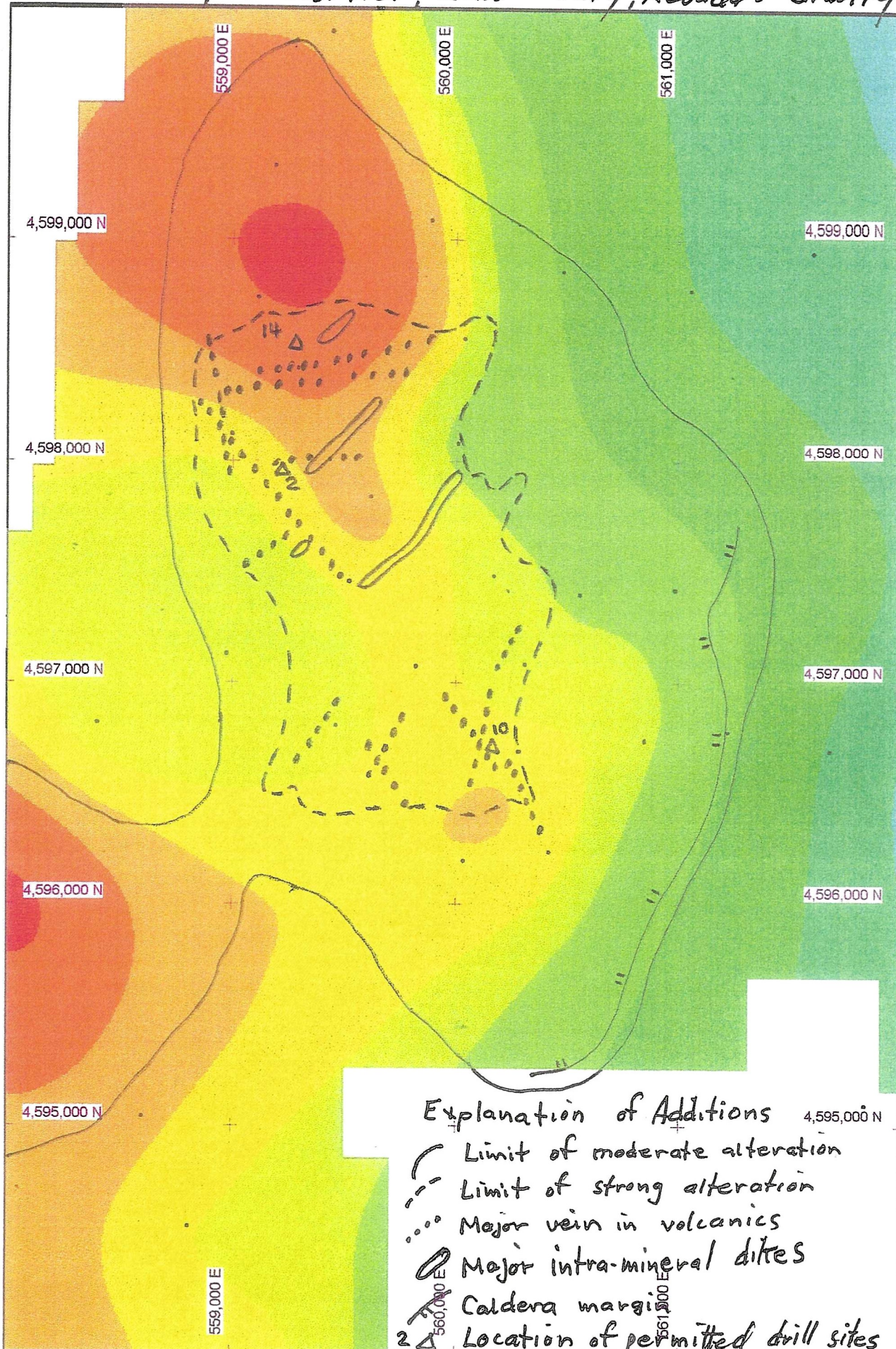
The magnetic survey anomaly map shows pronounced northeast and north-south structural patterns, with lesser northwest patterns. The caldera margin is also generally discernable, although the margin of the magnetic pattern is some 1,000 to 1,500 feet outside the surficial position of the caldera margin. This may be due to intrusions rising along accessory breaks outside the margin, at depth. Some of the magnetic highs clustered along the margin appear to be small intrusions, which are near, but not at, the current surface. The magnetic low in the center of the alteration pattern is possibly an "alteration low", as it appears to be developed in an extensive magnetic high. If pulses of the parental Eocene magma rise upward into the favorable/reactive sedimentary horizon it could possibly occur in the position of this magnetic low (this might produce a geometry

similar to that of the Cove gold-silver deposit). This possibility again makes the hole location "14" an excellent choice for an initial drill test. The structure, as indicated by the magnetic pattern, located near drill site "10", is a large, through-going one. The drill hole RC-10 was a surprising hole when drilled, it had the longest strong alteration and mineralization of any of the Cornucopia drill holes. Especially notable was the high pyrite content and strong arsenic values. This makes the drill site "10" very attractive as a drill test could be located to be within the gravity indicated block 3, near the structure indicated by the magnetic response, and within the strongest pervasive alteration known in the Cornucopia system. It should be noted that there is a tendency for Carlin Type Gold Deposits to form in the footwall of major faults, such as Hardie Footwall and Leeville Footwall, therefore, care should be taken to penetrate a dipping fault above the favorable/reactive level.

Conclusions and Recommendations. The author has previously described the Eocene alteration-mineralization systems located in the area of the Tuscarora Volcanic field as Carlin Type gold deposit targets. Additionally, the Paleozoic sedimentary rocks exposed at the surface are likely the Devonian Rodeo Creek fm. stratigraphy, which directly overlies the favorable/reactive carbonate-bearing stratigraphy which hosts the majority of the Carlin type gold deposits in nearby districts. The attached gravity and magnetic surveys show very favorable upthrown sedimentary basement rock blocks and large, through-going structures, coincident with surficially mappable Eocene alteration-mineralization systems. These fossil hydrothermal systems, such as at the main Cornucopia District, are very large, measuring, within the "moderate" alteration envelope, 16,000 feet by 8,000 feet at Cornucopia. Other nearby systems, such as at Red Cow, measure 25,000 feet in longest direction. These large systems, to include the one at Cornucopia, are likely entire Carlin Type Gold Deposit sub-districts, such as the coherent zone from Genesis north through Betze-Goldstrike at the west side of the Lynn Window in the main Carlin Trend.

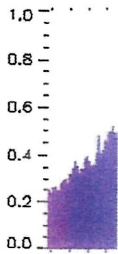
It is recommended that some company lease these prospective lands and drill a favorable/reactive horizon test hole, probably near the location of prior drill site "14". Search depths, possibly about 1,600 feet, are moderate and could be easily reached by a TH-75E, probably at a total cost, per 2,000 foot hole, of about \$60,000, inclusive. Risk analysis of this proposed test indicates normal risk capital, normal risk rates (due to the size and strength of the hydrothermal system, its Eocene age, and the arsenic-gold content, the upthrown block pattern of the gravity survey, and the major structure pattern of the magnetic survey), but potentially very high reward, ie potential discovery of an entire Carlin Type Gold Deposit sub-district, possibly containing tens of millions ounces gold! The Risk-Reward formula is heavily Reward Dominated.

Cornucopia District, Elko County, Nevada: Gravity Map



RONGRAVBM

Image file: RONG
Original image re:
Original image siz
Original image siz



Units are meter
gravpost

Database : Micro
Table and field : C
Data is not sorted
Symbol colors are
Symbol types are
Symbol sizes are
• gravpost

Statistics for JOB
Number : 30
Minimum : 79
Maximum : 21
Average : 173
Std Dev : 688
0 M 3
0 Ft 10

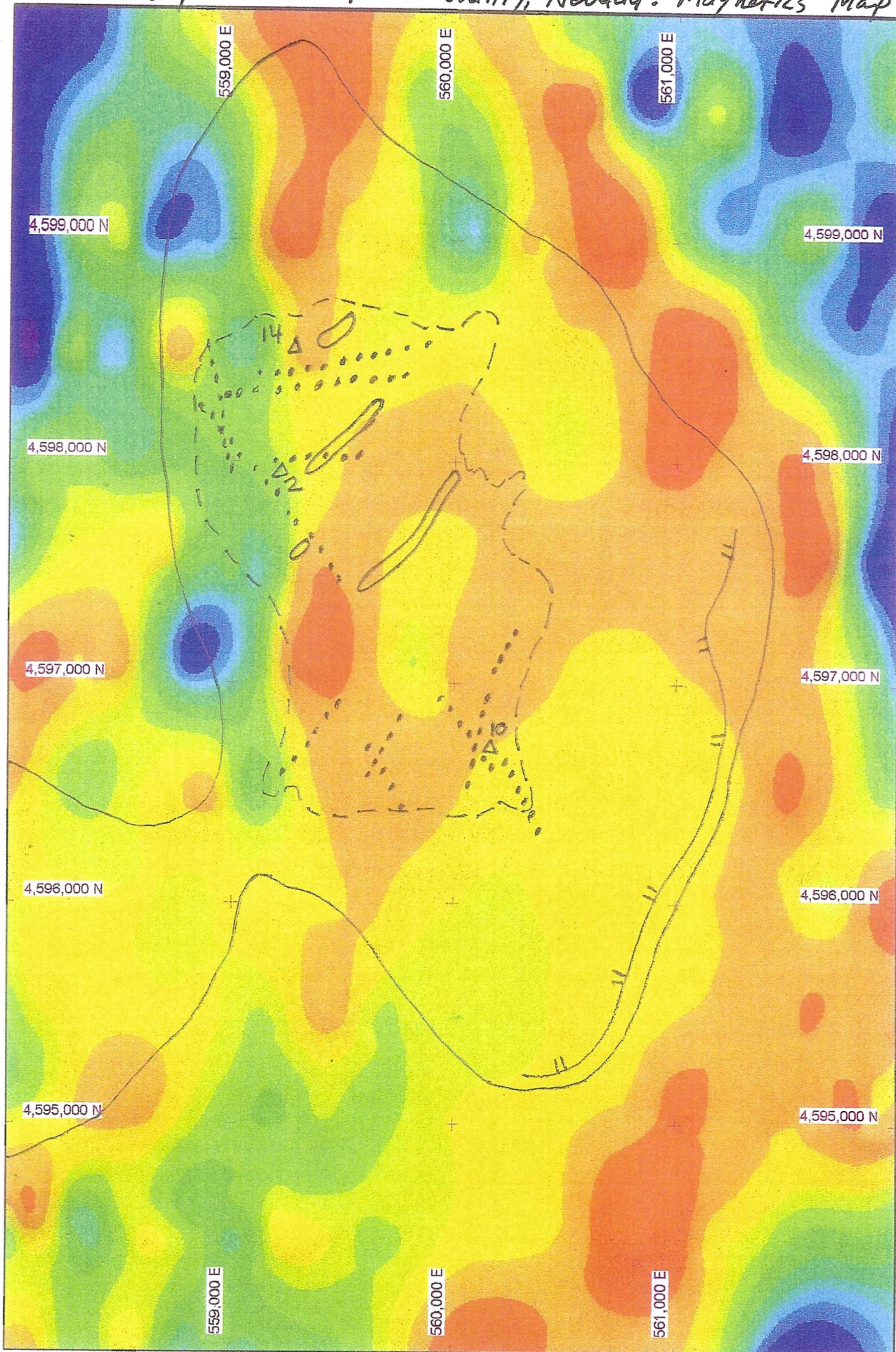
- Explanation of Additions**
- Limit of moderate alteration
 - - - Limit of strong alteration
 - ... Major vein in volcanics
 - Major intra-mineral dikes
 - ⌒ Caldera margin
 - 2 Δ Location of permitted drill sites

New

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RC Long Oct., 2001

Cornucopia District, Elko County, Nevada: Magnetis Map

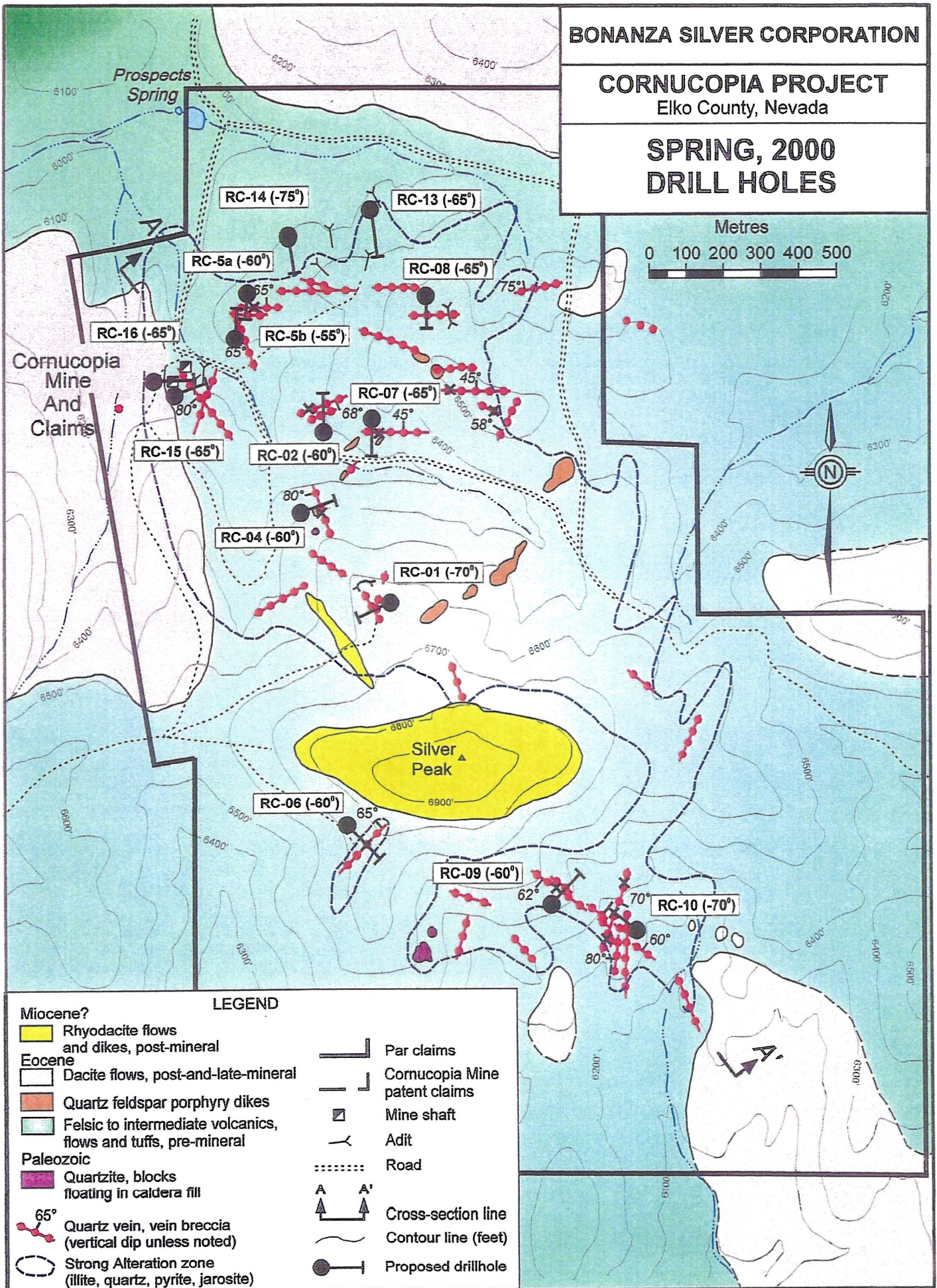


BONANZA SILVER CORPORATION

CORNUCOPIA PROJECT

Elko County, Nevada

SPRING, 2000 DRILL HOLES



LEGEND

Miocene?

Rhyodacite flows

and dikes, post-mineral

Eocene

Dacite flows, post-and-late-mineral

Quartz feldspar porphyry dikes

Felsic to intermediate volcanics,

flows and tuffs, pre-mineral

Paleozoic

Quartzite, blocks

floating in caldera fill

65° Quartz vein, vein breccia

(vertical dip unless noted)

Strong Alteration zone

(illite, quartz, pyrite, jarosite)

Par claims

Cornucopia Mine

patent claims

Mine shaft

Adit

Road

A A'

Cross-section line

Contour line (feet)

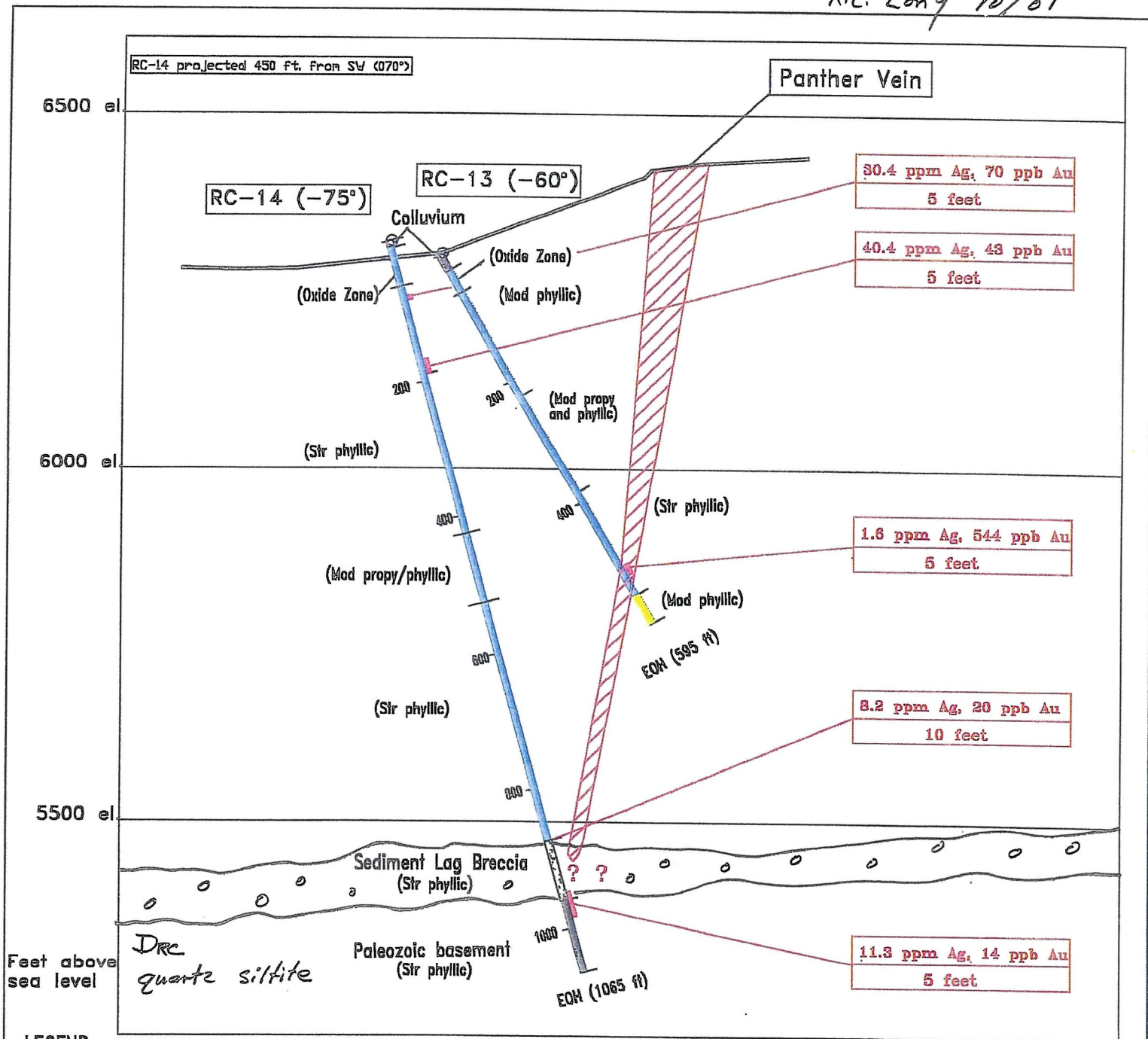
Proposed drillhole

Cornucopia District

Drill Site RC-14

Recommended SDrill Drill Test Location

R.C. Long 10/01



LEGEND

- | | | | | |
|-----------|--|---------------------------------|--|--|
| Eocene | | Regolith, alluvium | | Quartz vein zones
feldspar, pyrite
+ Ag minerals, adularia |
| | | Quartz Feldspar Porphyry | | Pyrite Zone |
| | | Andesite Porphyry | | |
| | | Dacite Porphyry (+debris flows) | | |
| Paleozoic | | Quartzites | | |

SCALE

0 200 400 feet

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BONANZA SILVER CORPORATION

Drill Section RC 13/14
(looking 070°)

Drawn by: dm
Scale: 1=200

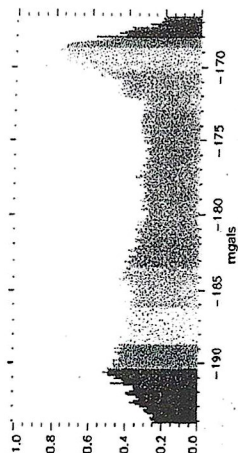
Date: 09/08/2000
File: GeoRC1414Sect.dwg

EXPLANATION

Block Numbers 1-5

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Original image size (Pixels X,Y): 492, 738
Original image size (Inches X,Y): 6.00, 9.00



Units are meters.

gravpost

Database : Microsoft Access, Grav.mdb
Table and field : GRAV, JOB NUMBER
Data is not sorted on read and plot.
Symbol colors are constant.
Symbol types are constant.
Symbol sizes are constant.

Statistics for JOB NUMBER on map:
• gravpost

Number : 30

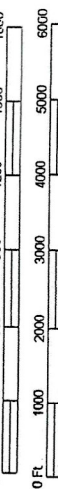
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Maximum : 2000020.000

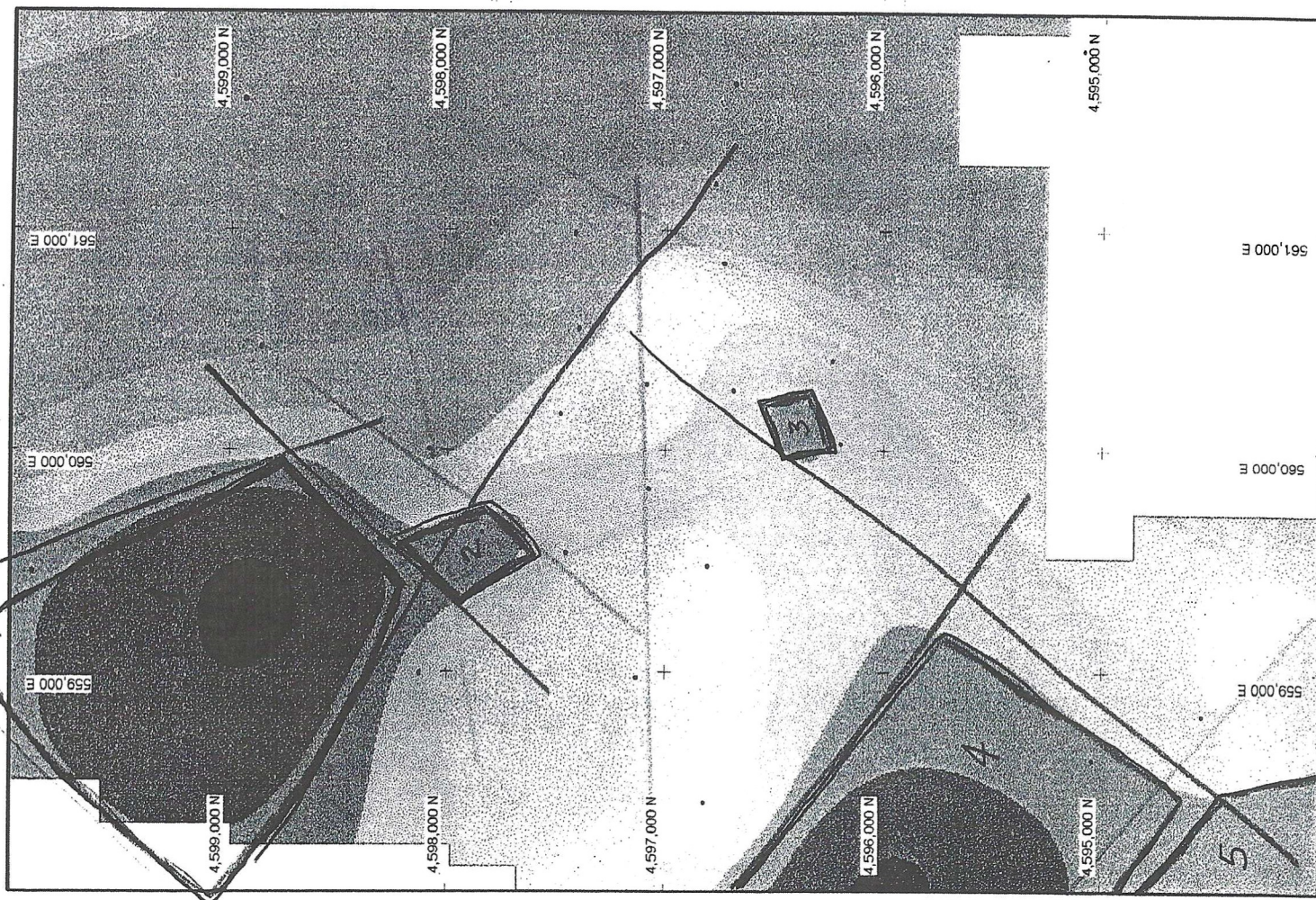
Average : 1734404.267

Std Dev : 688766.638

0 M



Scale 1:24,000 (1" = 2000')



Mining Corporation

CORNUCOPIA

GRAVITY SURVEY
CBA @2.50 G/CC

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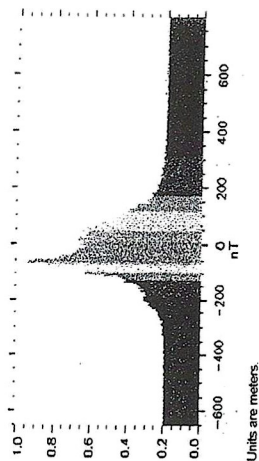


Stones 2.15

EXPLANATION

RONMAGBMP

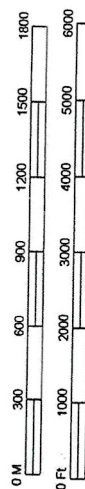
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Original image size (Pixels X,Y): 492, 738
Original image size (Inches X,Y): 6.00, 9.00



Units are meters.

Explanation

! Probable Structure - Through Going
! Probable Structure - Local
! Possible Structure



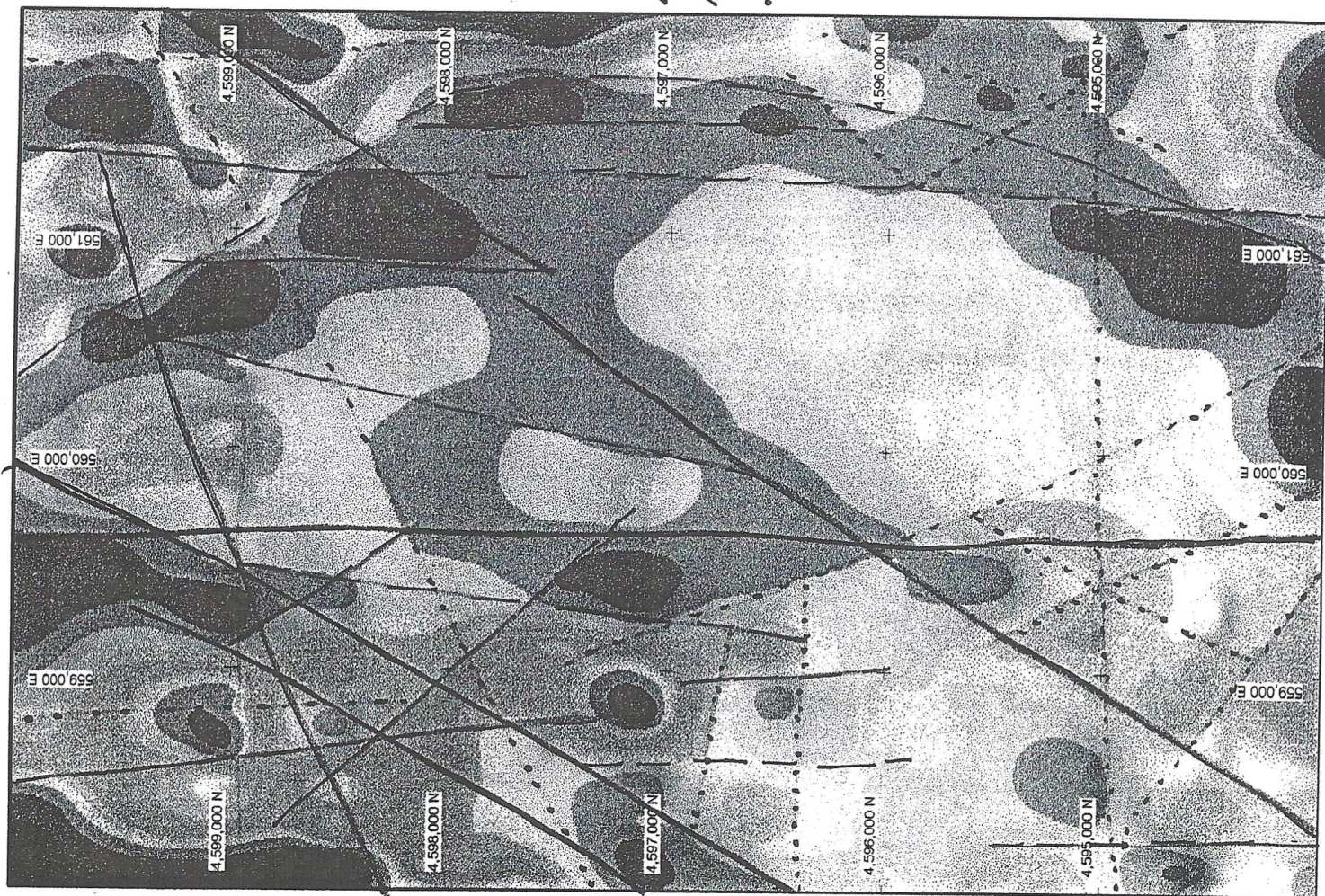
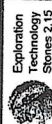
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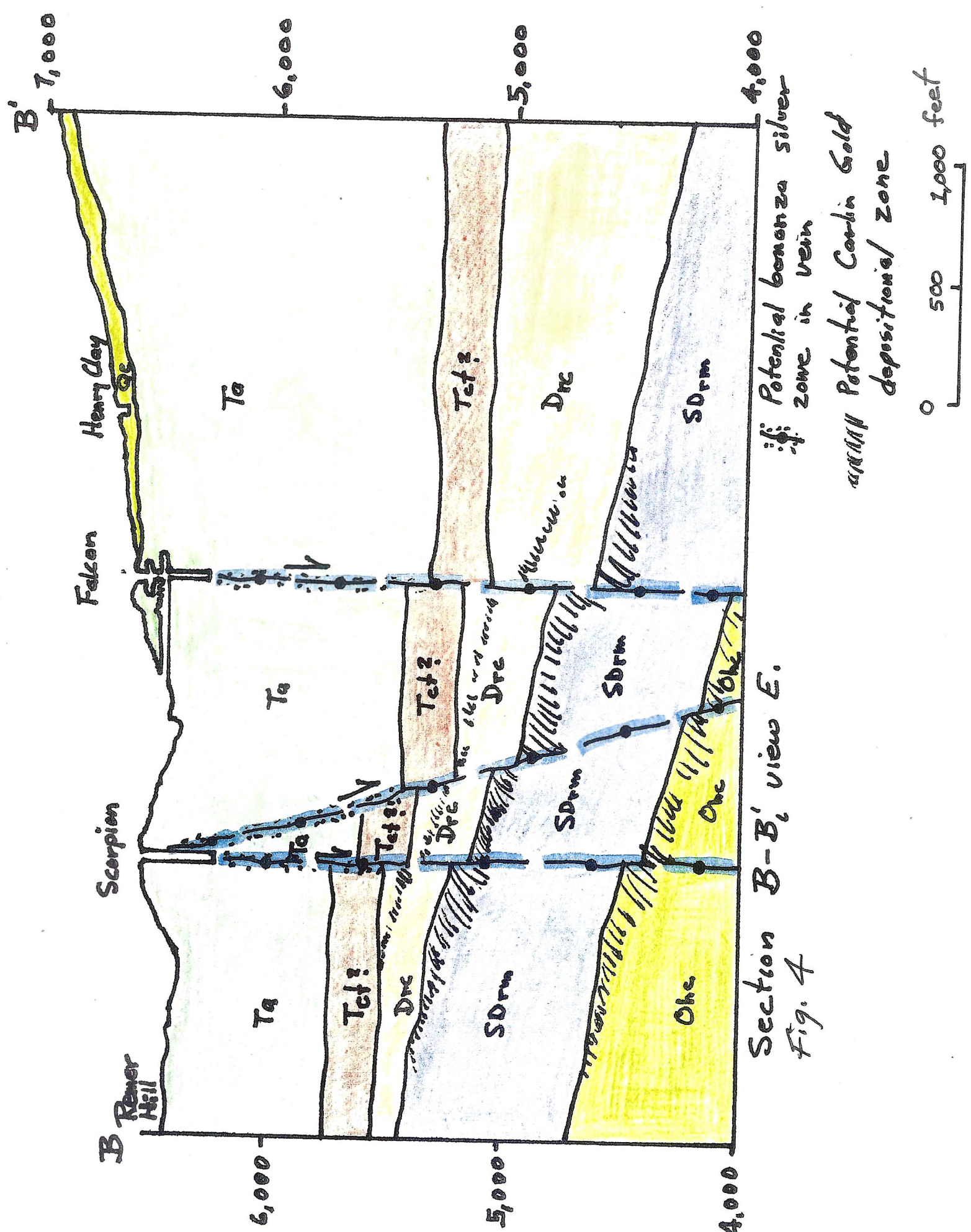
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CORNUCOPIA

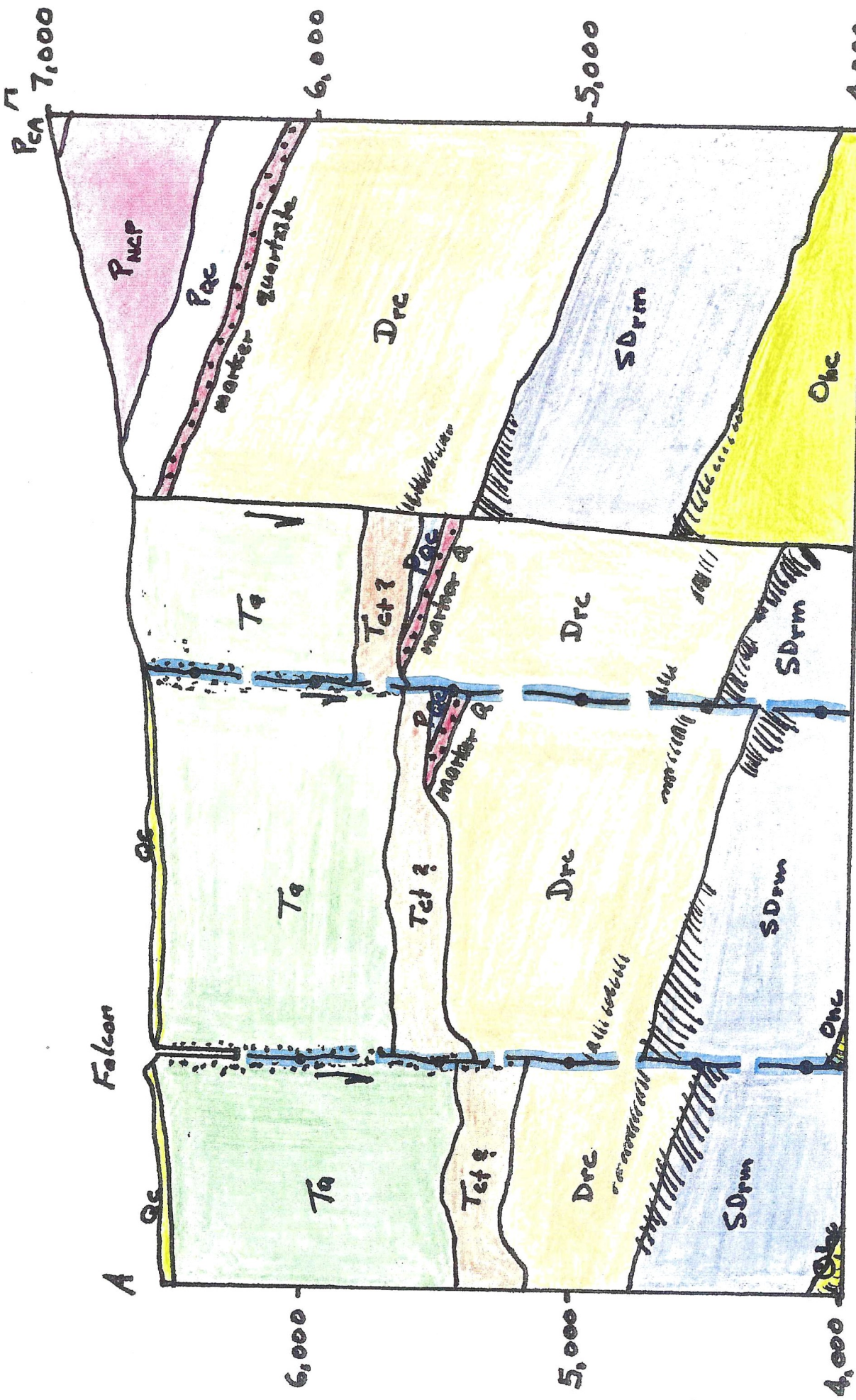
**AIRBORNE MAGNETIC SURVEY
POLE REDUCED TOTAL FIELD**

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Friday, September 28, 2001 08:00:46





Section B-B' view E.
Fig. 4



Section A-A', view NE.
Fig. 3

Potential bonanza silver zone in vein
Potential Carlin gold depositional zone

