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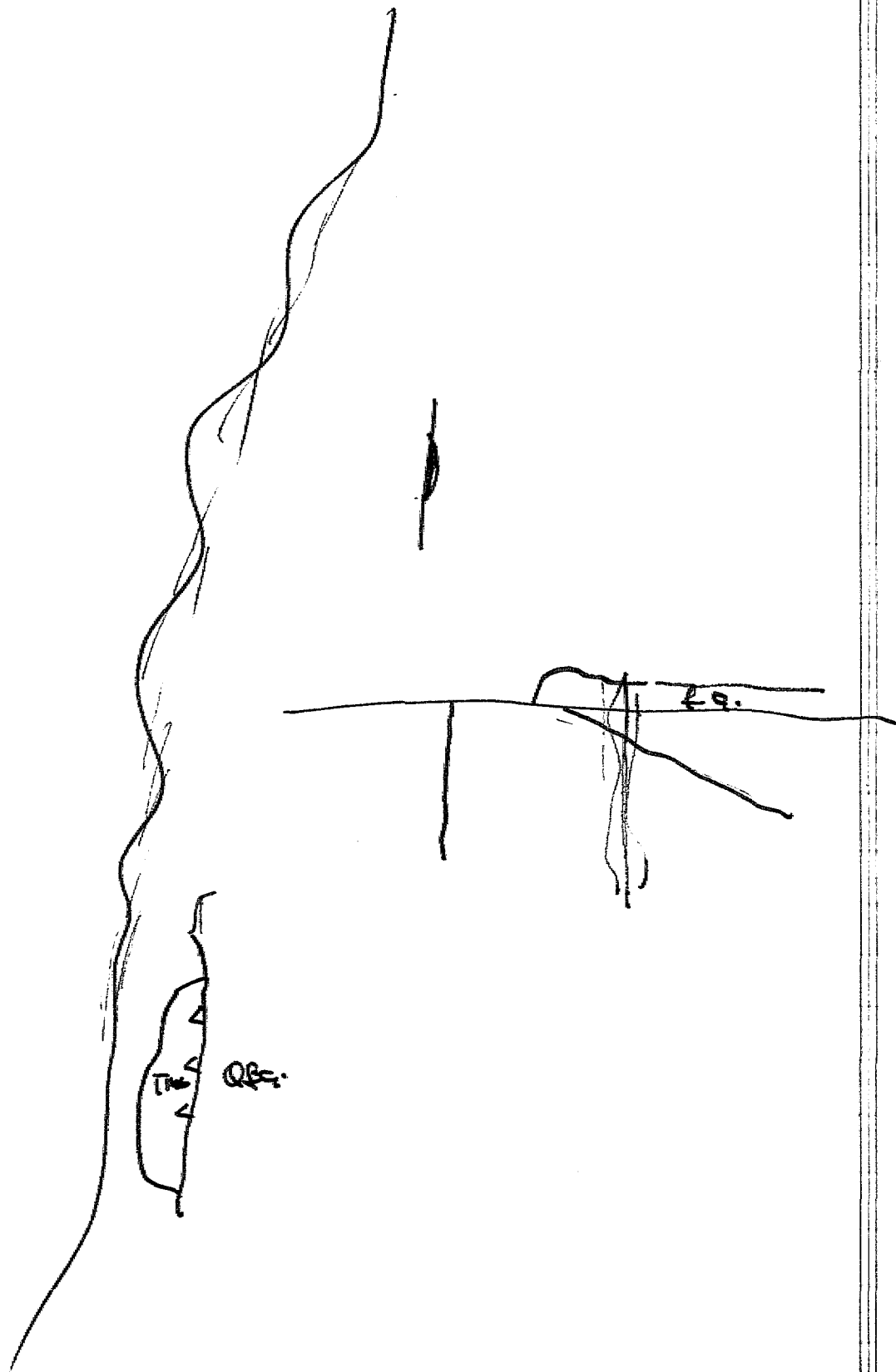
REPORTS BORROWED FROM JDS 3/1/95

1. CORN 4/19/94 Geol. Eval & Sampling Results
American Heavy Minerals Property,
Lost Basin District, Mohave Co AZ
2. CORN 3/24/94 Review of AMERICAN Heavy Minerals
Property, Lost Basin District,
Mohave Co. AZ
3. CORN 2/91 Geol. & Gold Mineralization —
Gold Basin — Lost Basin Mining
Districts, Mohave Co. AZ
4. CORN 5/9 Geol & Expl. Potential of the
Gold Basin & Lost Basin Mining
Districts, Mohave Co. AZ

OpM
5/1/95

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by 6/95



3/91 JDS

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March 24, 1991

Re: Review of American Heavy Minerals Property
Lost Basin District
Mohave County, AZ

The American Heavy Minerals (Apache Oro) Lost Basin property consists of 176 lode claims and 92 placer claims on the east side of the Lost Basin Range. The claims cover sheared and altered Precambrian metamorphic rocks along the projected northern extension of the Lost Basin Detachment Fault, adjacent placer gold deposits, and a number of narrow, gold-bearing quartz veins. Known vein deposits and the limited placer potential of the property are not of economic interest, but there is a possibility of concealed mineralization along the projected trend of the detachment fault.


The placer gold potential of the property has been investigated by several companies including Western Nuclear, AMAX and Billiton Minerals. Their results indicate that appreciable placer values are confined to thin Quaternary alluvial channels and that the underlying Late Tertiary fanglomerate contains little recoverable gold. The fanglomerate is unsorted, bouldery, and reflects an environment unfavorable for placer gold concentration. The known alluvial placers probably represent a residual concentration from the fanglomerate and reworking of gold originally concentrated on the older erosion surface beneath the fanglomerate. Numerous shallow holes were drilled by Apache Oro in the early 1970's, Resources International Partners (RIP) in the late 1970's and early 1980's, and Billiton Minerals in 1989 in exploration of both the placer and lode potential of the property. Most of the earlier Apache Oro and RIP drill data is not believed reliable because of poor sampling procedures and questionable assays. American Heavy Minerals belief that the fanglomerate contains appreciable gold is based on these early high assays, anecdotal evidence, and erroneous USGS reports.

Billiton Minerals 1989 drilling program was directed primarily toward the placer potential of the property. They drilled approximately 40 shallow holes (including duplicates) in the Late Tertiary fanglomerate and 5 shallow holes in exposed Precambrian rocks. Recoverable placer gold values were determined by gravity processing and amalgamation of the drill cuttings. Recoverable gold values were extremely poor in their earlier drill holes but increased by a factor of 10 or more after a change in processing methods late in the program. However, even with better recovery, the recoverable gold content of the fanglomerate was in the general range of .002 to .005 oz Au/yd. Unfortunately there was no data that reliably indicated the total amount of contained gold or the percentage recoveries during the later processing. Billiton's drill holes in exposed metamorphic rocks did not encounter any gold mineralization of interest.

Resources International Partners drilled approximately 50 shallow holes in altered and sheared metamorphic rocks along the northern projection of the Lost Basin Detachment Fault. The reported results show an average of .01 to .02 oz Au/T for many of the drill holes but assays are believed questionable. The location of the RIP drill holes, those with higher reported values, the five holes drilled by Billiton Minerals and the contact of the metamorphic rocks and overlying Late Tertiary fanglomerate are shown on the attached map. A zone several thousand feet wide along the fanglomerate contact and the projected trend of the eroded detachment fault has not been tested by previous drilling and could have potential for concealed bulk-tonnage gold mineralization.

The sheared and altered metamorphic rocks are believed to reflect the former position of the eroded detachment fault zone. Similar zones of more intense shearing or the detachment fault zone preserved beneath the fanglomerate could provide a favorable host environment for bulk-tonnage gold mineralization. Surface sampling is planned as the easiest way to determine if there is potential for this type of concealed mineralization.

Respectfully submitted,



Russell M. Corn

Placer
claim
areas

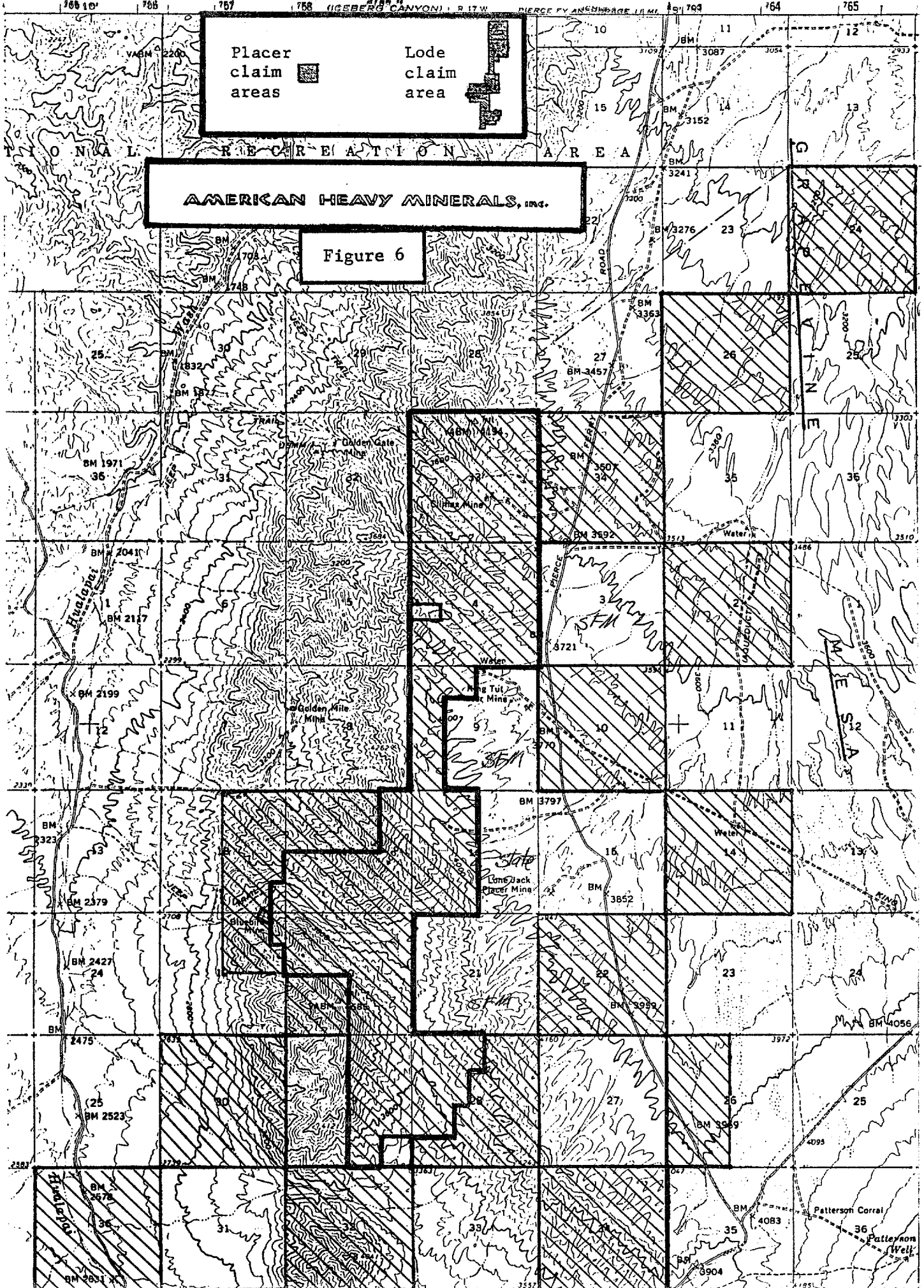


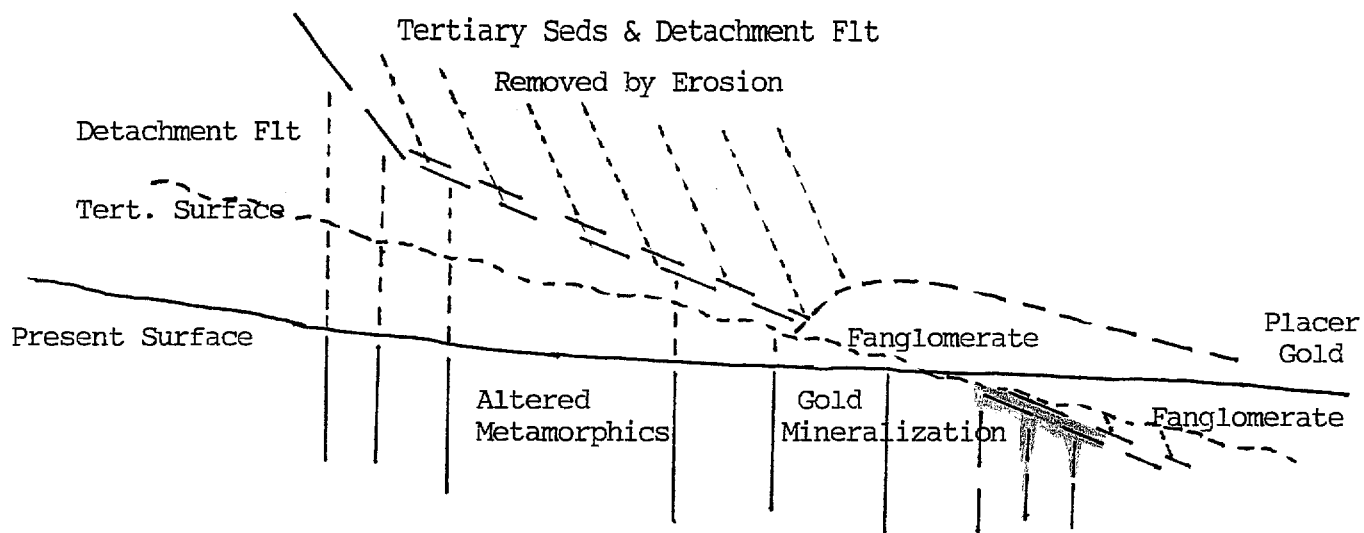
Lode
claim
area



AMERICAN HEAVY MINERALS, INC.

Figure 6

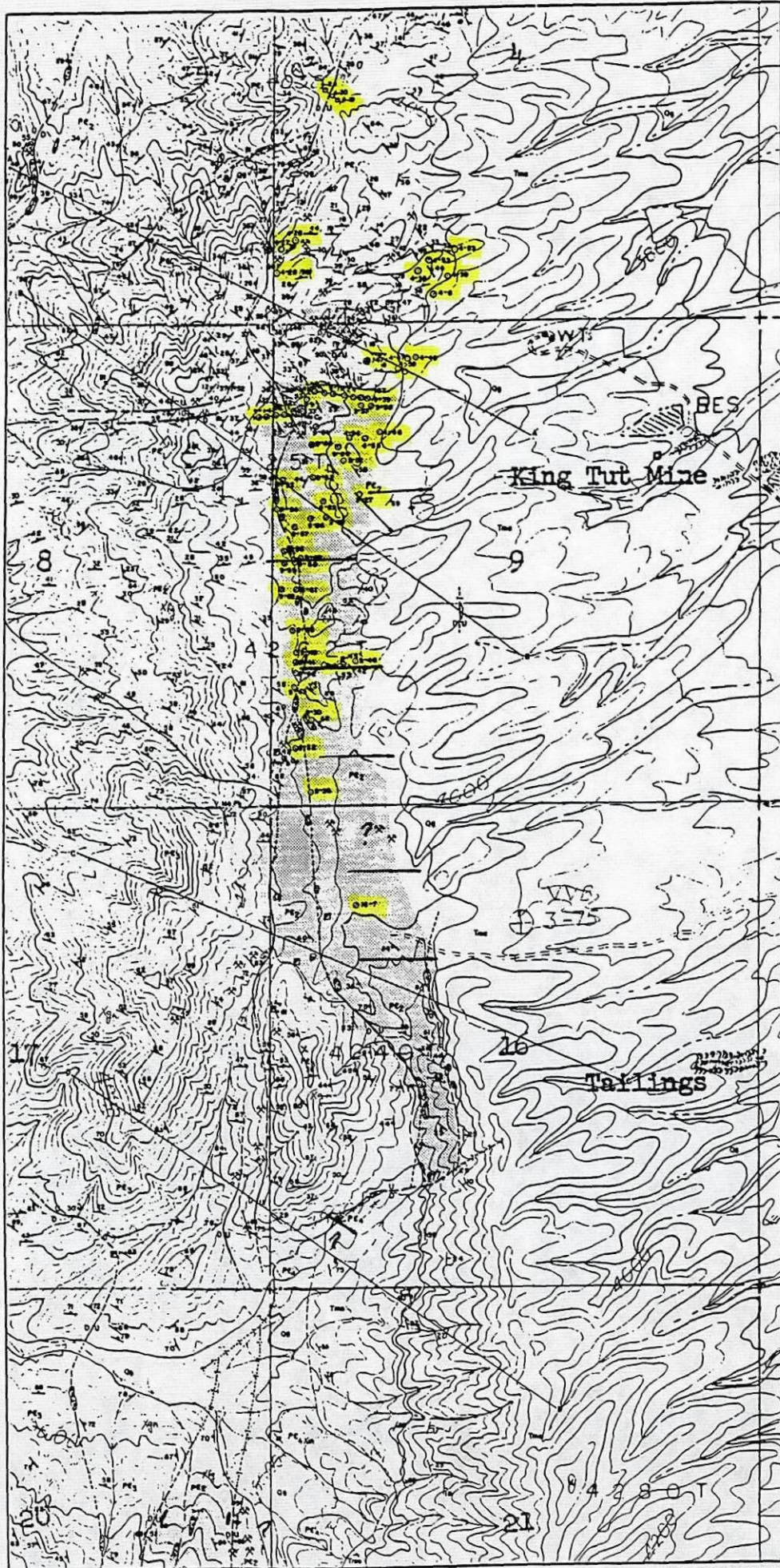




GENERALIZED E - W SECTION

ILLUSTRATING GEOLOGIC RELATIONSHIPS

LOST BASIN, MOHAVE COUNTY, ARIZONA



Tmc - Fonglomerate

Tms - Sed. Rock

▲ Detachment
Fault

Drill Holes

* Billiton Mins.

○ RIP

Average Assay
Entire Drill Hole

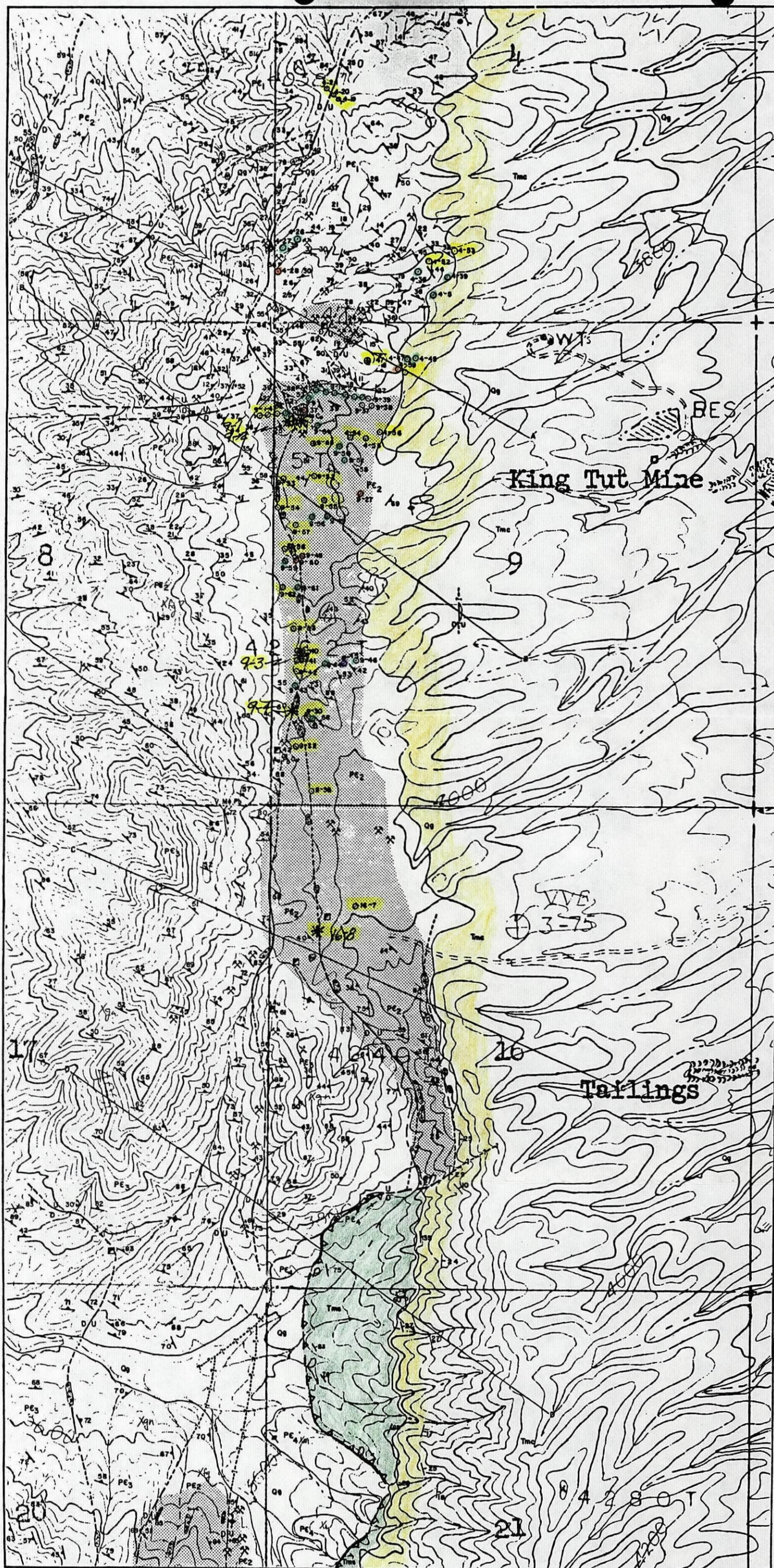
oz Au/T

below .01

○ .01 - .02

○ .02 - .03

○ + .03



GEOLOGY AND GOLD MINERALIZATION

GOLD BASIN - LOST BASIN MINING DISTRICTS

MOHAVE COUNTY, ARIZONA

GEOLOGY AND GOLD MINERALIZATION

GOLD BASIN - LOST BASIN MINING DISTRICTS

MOHAVE COUNTY, ARIZONA

RUSSELL M. CORN

February, 1991

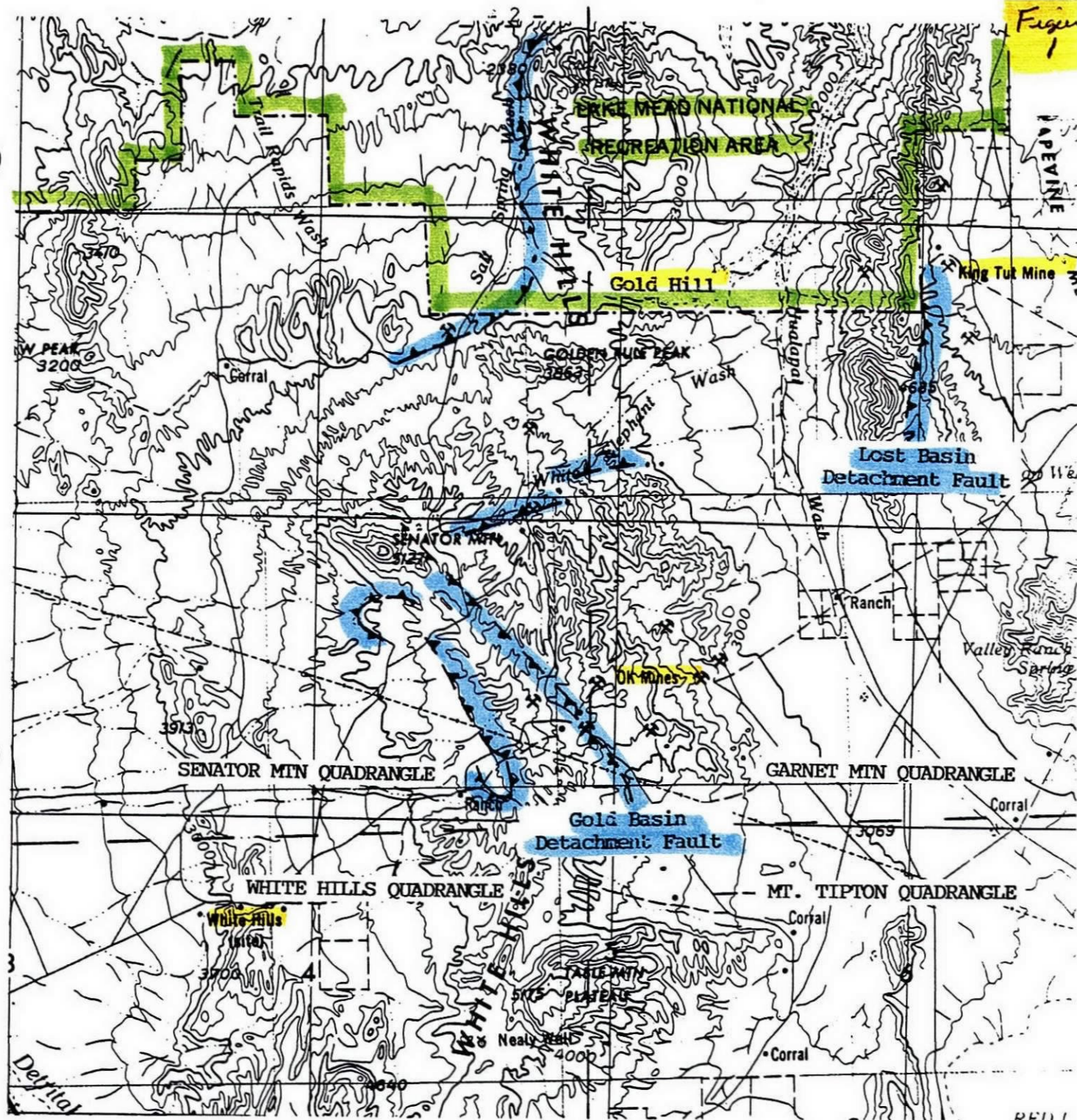
GEOLOGY AND GOLD MINERALIZATION
GOLD BASIN - LOST BASIN MINING DISTRICTS
MOHAVE COUNTY, ARIZONA

General

This report summarizes the geologic research and compilation studies of the Gold Basin - Lost Basin area of northern Mohave County, Arizona carried out during January and February, 1991. The area involved in the study encompasses the Garnet Mountain and Senator Mountain 15' topographic quadrangles and the adjacent northern half of the White Hills quadrangle and the Mt. Tipton NW 7½' quadrangle. The available geologic maps and data on geology and mineralization, supplemented by field observations, were integrated and are presented on a uniform 1:24,000 scale topographic base. The geologic compilation and study indicated that (1) the dominant structural features in the area are the Mid-Tertiary low-angle detachment-type faults, (2) a stratiform zone of extensive chlorite-siderite-hematite alteration is associated with the detachment faults, (3) placer gold deposits and prospects are preferentially located down-slope from the projected eroded detachment fault zone at positions where the Mid-Tertiary erosion surface has been exhumed, and (4) diffuse, non-vein, Tertiary, epithermal gold mineralization is localized in and near the detachment fault zone. Figure 1

Geologic mapping in the area has been limited in both detail and scope and the compiled maps are based on a mixture of original mapping on a detailed 1:12,000 scale and generalized photo interpretation on 1:100,000 and 1:250,000 scales. The geologic maps of the Garnet Mountain quadrangle are based primarily on pre-1975 field work by P. M. Blacet, presented in USGS Open File Map 75-93 and USGS Professional Paper 1361, supplemented by later detailed mapping in the Lost Basin district by A. Deaderick and in the Gold Basin District by Corn and Ahern. There is very little detailed data available on the Senator Mountain and White Hills quadrangles and the geology in these quadrangles is very generalized. The compiled maps for these quadrangles are based mostly on the generalized maps presented in Professional Paper 1361 and MM-88A, Santa Fe's regional map of Mohave County, supplemented by personal data and field observations made during this study. Rock units throughout the area are coordinated with those described in USGS Professional Paper 1361.

Data presented on mineralization in the area were compiled from private reports, Ariz. Dept. of Mineral Resource files and published USEM and USGS descriptions. Descriptions of mineralization and the list of prospects published in USGS Professional Paper 1361 were utilized in this study. However, the list presented is not an exhaustive list of all prospects and mines; it includes all types and sizes of prospects regardless of the intensity or economic importance of the mineralization, and it is often erroneous because of the lack of sampling and analytical data. Data presented in Prof.



INDEX MAP OF THE GOLD BASIN - LOST BASIN
MINING DISTRICTS, MOHAVE COUNTY, ARIZONA

Detachment Fault Zone

Scale 1" = 3 miles



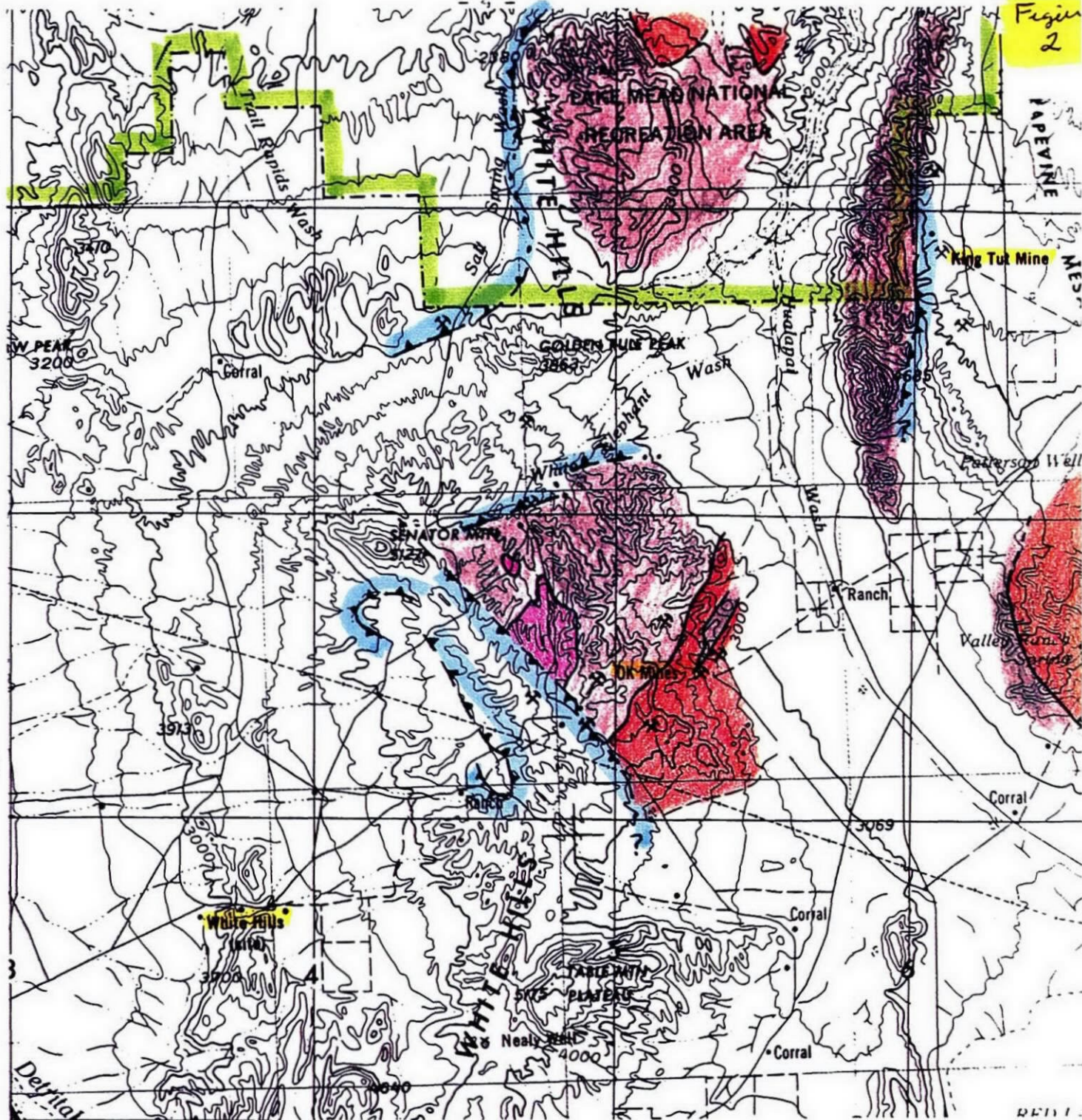
Paper 1361 is also biased because the Survey personnel did not recognize the diffuse, low-sulfide, Tertiary, epithermal gold mineralization hosted by the detachment fault zones. Larger mines and prospects that have received exploration attention are tabulated separately in an appendix together with brief notes on past production, exploration history, and results.

Geologic Relationships

The Gold Basin - Lost Basin area is at the west edge of the Colorado Plateau and exhibits an abrupt change and an extreme contrast in structural style between the structurally stable plateau and the adjacent area of structural distention, low-angle faulting and structurally rotated Tertiary volcanic and volcanoclastic rocks floored by detachment-type low-angle faults. Basement rocks in the area are Proterozoic, amphibolite-grade, gneissic metamorphic rocks intruded extensively by large granitic intrusives. The USGS separated the intrusives and carried out detailed petrographic studies on them in the Garnet Mountain quadrangle, but they are not differentiated elsewhere in the area. Protoliths of the various metamorphic rocks are noted in limited areas where data was available. Metavolcanic and metasedimentary units include basalt, marble, quartzite, iron formation and tourmalinite horizons. Fig. 2

Northwest of the Cyclopic Mine the Precambrian rocks have been intruded by a Cretaceous, quartz-rich, two-mica monzo-granite. The two-mica monzo-granite exhibits extensive alaskitic alteration to a siliceous, muscovite-only facies near the trace of the Gold Basin Detachment Fault zone. *Figure 2.*

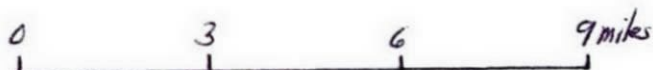
Tertiary rock units include a thick sequence of pre-mineral volcanic, volcanoclastic and fanglomerate units that are structurally rotated and floored by the extensive low-angle detachment-type faults. Overlying the older Tertiary units are post-mineral Late Tertiary, gently-dipping, limestone, fanglomerate and basalt. The major problem with previous geologic mapping in the area has been that of differentiating the pre-mineral and post-mineral fanglomerate units. The older fanglomerate is associated with volcanic rocks and commonly contains interbedded rhyolitic tuffs that are steeply-dipping. The younger, post-mineral fanglomerate, although similar in lithology, is gently-dipping and draped on to the older Tertiary erosion surface. The younger fanglomerate was derived in large part from the older one and there is no clear-cut contact between the two units. Tertiary lamprophyre dikes are associated with the White Hills veins and lamprophyre is common along the trace of the Gold Basin Detachment Fault and may have been localized by the fault. They cut the Cretaceous granite and structurally rotated Tertiary volcanic rocks, are variably sheared, altered and mineralized and appear to be the youngest pre-mineral rock unit.



GENERALIZED GEOLOGY OF THE PRECAMBRIAN BASEMENT

GOLD BASIN - LOST BASIN DISTRICTS

Scale 1" = 3 miles



- Cretaceous Granite
- Precambrian Granite
- Precambrian Gneiss

Structure

Structural features include north-south trending, Late Tertiary high-angle faults and earlier, (Cretaceous?) north-south, and northeast-trending, steep to moderate-dipping faults and shear zones. The N20-30E trend is reflected by rock boundaries, veins and faults and may be inherited from Precambrian structures.

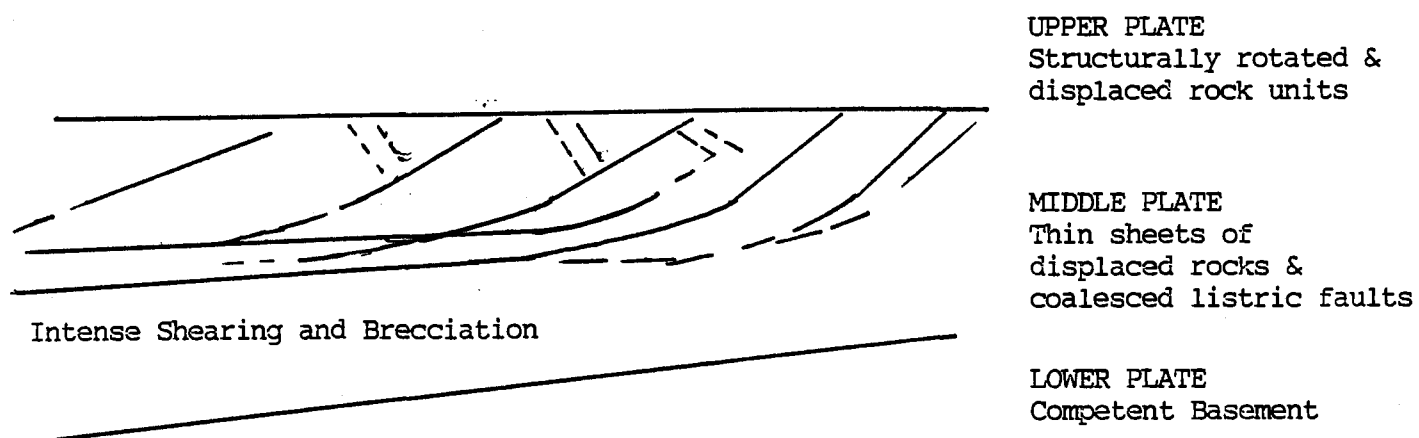
The dominant structural features in the area are the complex, stacked sequence of Mid-Tertiary, low-angle detachment-type faults that mantle the cohesive block of Precambrian basement rocks. The detachment faults can be visualized as a sandwich-like ^{Figure 3} sequence of sub-horizontal lithotectonic units consisting of (1) a lower unit of relatively competent cohesive Precambrian rocks, (2) a middle unit of variable thickness that consists of numerous low-angle fault slivers, coalesced listric faults and highly sheared, brecciated, and disaggregated rocks, and (3) an upper unit consisting of one or more cohesive, low-angle fault slices of structurally-rotated Tertiary and older rocks. Precambrian granite and gneiss in the upper plate units commonly appear shattered, exhibit numerous small slips and faults, and are characterized by variable siderite-chlorite alteration. The detachment fault zone and lithotectonic units are illustrated on the accompanying maps by (1) the indicated low-angle fault zone above the competent Precambrian basement and (2) the overlying low-angle fault zone at the base of the structurally rotated Tertiary rocks. A semi-stratiform zone of chlorite-siderite alteration that is several hundred feet thick is associated with the intensely sheared middle plate unit and is reflected by a widespread color anomaly. The lithotectonic plates can not be easily differentiated where Precambrian rocks occur in the upper plate or as possible intermediate slices such as in the area north of White Elephant Wash and southwest of the Cyclopic Mine in the southern part of the Senator Mountain SE quadrangle. In these areas the granite and gneiss in the intermediate slice exhibit widespread chlorite-siderite alteration and appear sheared and highly fractured as reflected by the subdued topographic relief. The upper plate slices appear to thicken and increase in number south and west of the Cyclopic-Senator Mountain area.

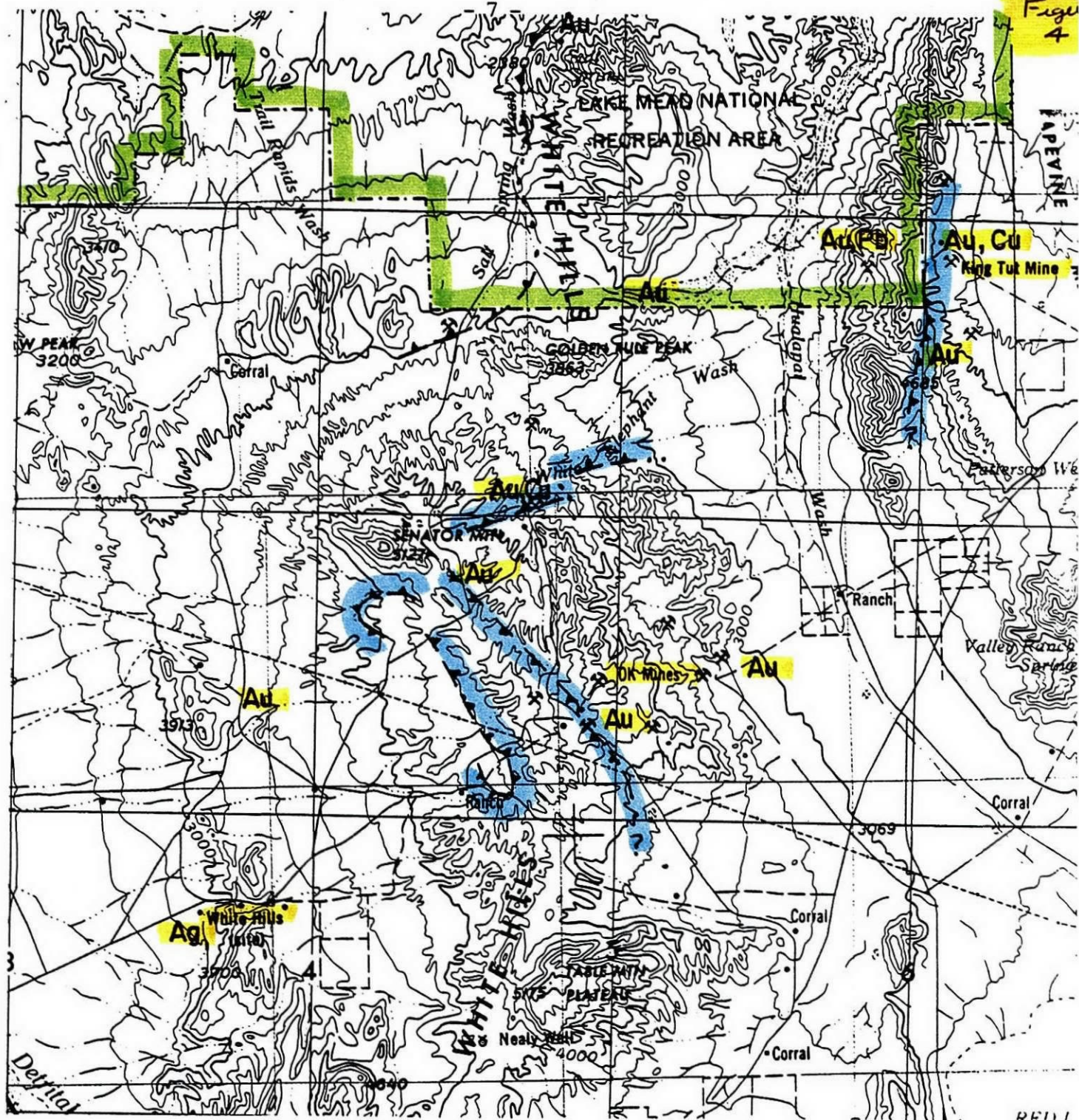
In the Cyclopic-Senator Mountain area, upper plate rock units, the Gold Basin detachment fault zone and gold mineralization all exhibit a northwest strike direction. This is a pronounced contrast to the general north-south strike direction of the rotated upper plate rocks farther south and west. These relationships suggest the presence of a concealed northwest-trending tear fault that influenced both detachment faulting and subsequent mineralization.

Mineralization

Gold has been the dominant metal of economic interest in the Gold Basin-Lost Basin districts, with silver dominant at the adjacent White Hills district. ^{Figure 4} Hydrothermal alteration and mineralization occurred in the Mid-Tertiary, Cretaceous, and possibly the

SCHEMATIC SECTION THROUGH GOLD BASIN DETACHMENT FAULT

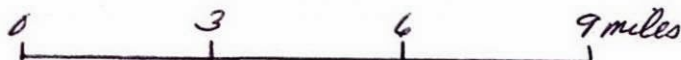




METALLOGENIC MAP OF THE
GOLD BASIN - LOST BASIN
MINING DISTRICTS

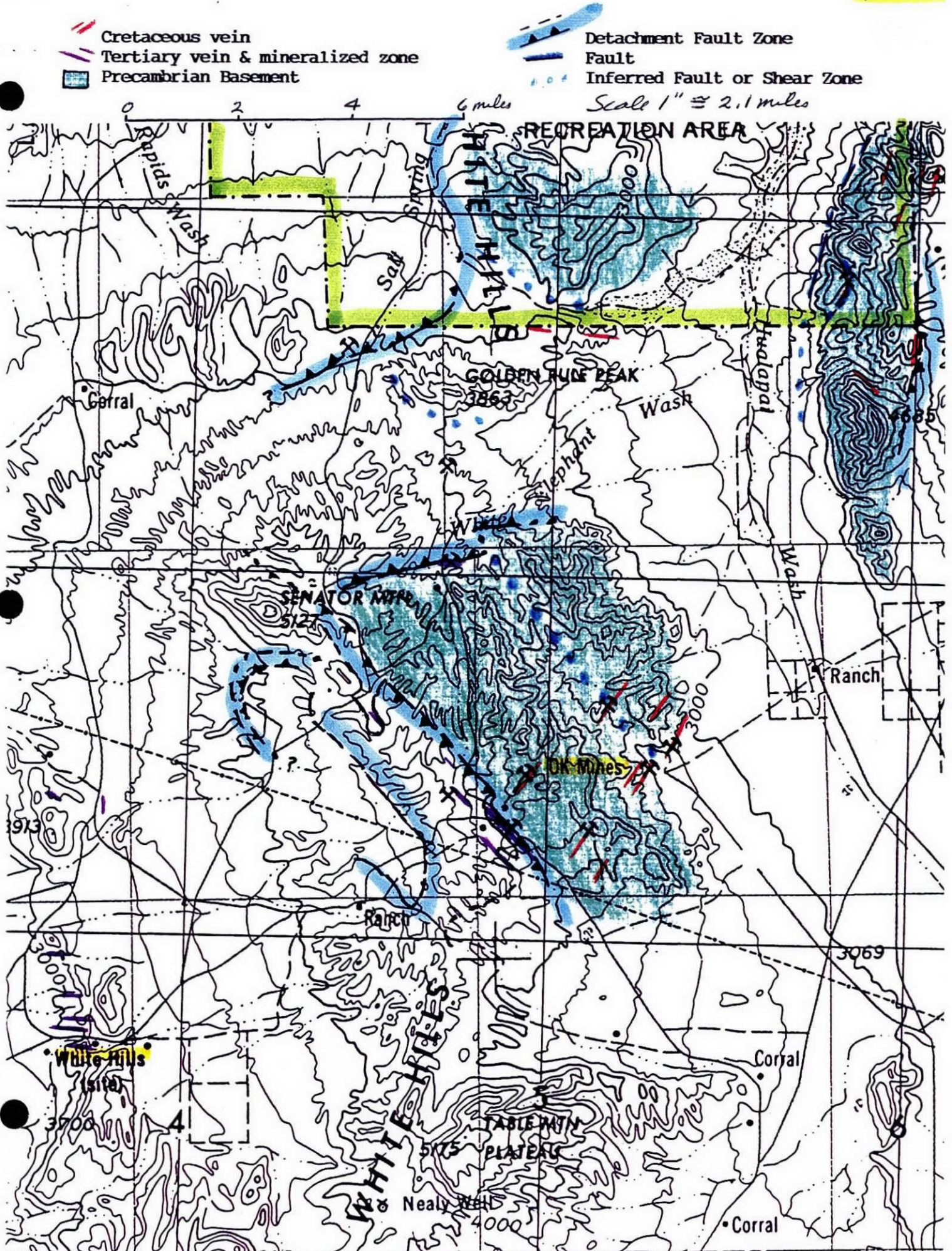
Scale 1" = 3 miles

Au Dominant Metal



GOLD BASIN - LOST BASIN MINING DISTRICTS

Figure 6



Proterozoic, with most mineralization closely related to major structural features. Base metals are not associated with the Tertiary epithermal mineralization at the White Hills or the Fry and Cyclopic Mines and are not significant in most of the earlier veins. Appreciable amounts of copper occur in pyritic veins in the Lost Basin Range and in the detachment-related mineralization at the Owens Mine east of Senator Mountain. Copper here is associated with specularite and gold may have been superimposed on earlier copper-specularite mineralization. Lead is common in veins on the west slope of the Lost Basin Range and occurs together with copper and zinc in veins northeast of the Cyclopic Mine. The limited available data does not indicate a definite metal zoning pattern, but instead suggests that the abundance of different metals is associated with different ages and phases of mineralization. The generalized distribution of metals is shown on the accompanying page size map and the dominant metals, together with the characteristic gangue minerals, are noted on the larger maps of gold mineralization. *Figure 4*

Fluorite was noted by the USGS in a number of small veins northwest and east of the Cyclopic Mine, and also occurs in Tertiary mineralization in the vicinity. Fluorite ^{*Figure 5*} appears to be spatially related to the Cretaceous two-mica granite and occurs in two clusters of associated veins. It is not directly associated with gold mineralization and is not reported in the larger gold veins. The episyenite pipes in the vicinity of the eastern cluster of fluorite veins at Gold Basin contain fluorite, while fluorite was not noted in episyenite in the Lost Basin Range. The OK and El Dorado veins adjacent to the cluster of fluorite veins east of the Cyclopic Mine contain wolframite. Elsewhere in the district, tungsten occurs as scheelite, both in veins and in skarn zones adjacent to Precambrian intrusives.

Gold Mineralization *Figure 6*

Precious metal mineralization of past or potential economic interest is widespread in the area and occurs as relatively narrow well-defined veins; as small episyenite pipes and dikes; as diffuse, non-vein, epithermal mineralization in low-angle detachment fault zones and overlying high-angle fault breccias, and as placer deposits in relatively thin surficial gravels. Past gold production is estimated at 5,000 to 10,000 ounces respectively from the Cyclopic mine, the OK-Malco-Eldorado veins, and the Lost Basin vein and placer deposits. Production from the White Hills district was dominantly silver with perhaps 5,000 ounces of associated gold. The characteristics of mineralization and the production and exploration history for the major mines are briefly summarized in an appendix to this report and known mineralization is shown on overlays to the geologic maps. *(in file)*.

Episyenite

Two clusters of gold-bearing episyenite pipes and dikes occur in the area, (1) along the east edge of the White Hills in the SE part of T28N, R18W and (2) in the Lost Basin Range in the central part of T29N, R17W. The episyenite (a desilicated metasomatic rock) consists of fresh feldspar, carbonate minerals, fluorite and pyrite and is described in detail in Professional Paper 1361. The episyenites commonly contain values of .10 oz Au/T and a large mineralized episyenite could be an attractive bulk-tonnage exploration target. However, known dikes and pipes are relatively small and are not of exploration interest. Santa Fe Minerals drilled the episyenites in Secs 34 and 35, T28N, R18W. Reportedly both gold values and the size of the episyenite were the same at depth as in surface exposures.

Cretaceous (?) Veins *Figure 6*

Most of the early prospecting and mining was directed toward well-defined, N-S to N 30°E trending veins in the Lost Basin District and the eastern side of the Gold Basin district. The veins consist of white quartz, coarse-grained carbonate (ankerite-siderite) and variable, but generally minor amounts of coarse-grained sulfides, pyrite, galena, chalcopyrite and sphalerite. They exhibit associated chlorite-siderite alteration. Age dating by the USGS has indicated that the veins are Cretaceous. Most veins are relatively narrow and gold values of interest are concentrated in zones of later shearing or brecciation. The higher-grade gold values are commonly associated with fine-grained hematitic limonite and clear druzy quartz, suggesting superimposed or late phase mineralization. Available data indicates that the veins could contain limited tonnages averaging .20 to .30 oz Au/T over widths of three to five feet. None of the known veins are of economic interest at the present time. Several of the veins in the Lost Basin Range are associated with wide shear zones, but it is not known if there is potential for larger-scale mineralization or if this possibility has been tested previously.

Tertiary Epithermal Veins *Figure 6*

The White Hills district exhibits a compact cluster of east-west trending, relatively-narrow, epithermal veins with dominant silver values. The veins are hosted by a thick upper plate slice of Precambrian gneiss and many veins appear to be listric structures, flattening with depth. The veins are commonly associated with lamprophyre dikes and exhibit deep oxidation and supergene enrichment. They consist of vuggy quartz, limonite after pyrite, and manganese oxides with little or no associated base metals. The veins are exposed in a narrow zone sandwiched between post-mineral basalt to the east and extensive gravel cover to the west. The White Hills veins continue beneath post-ore cover and are probably much more extensive than indicated by the limited exposures.

Tertiary, Epithermal, Detachment Fault-Related Mineralization *Figure 6*

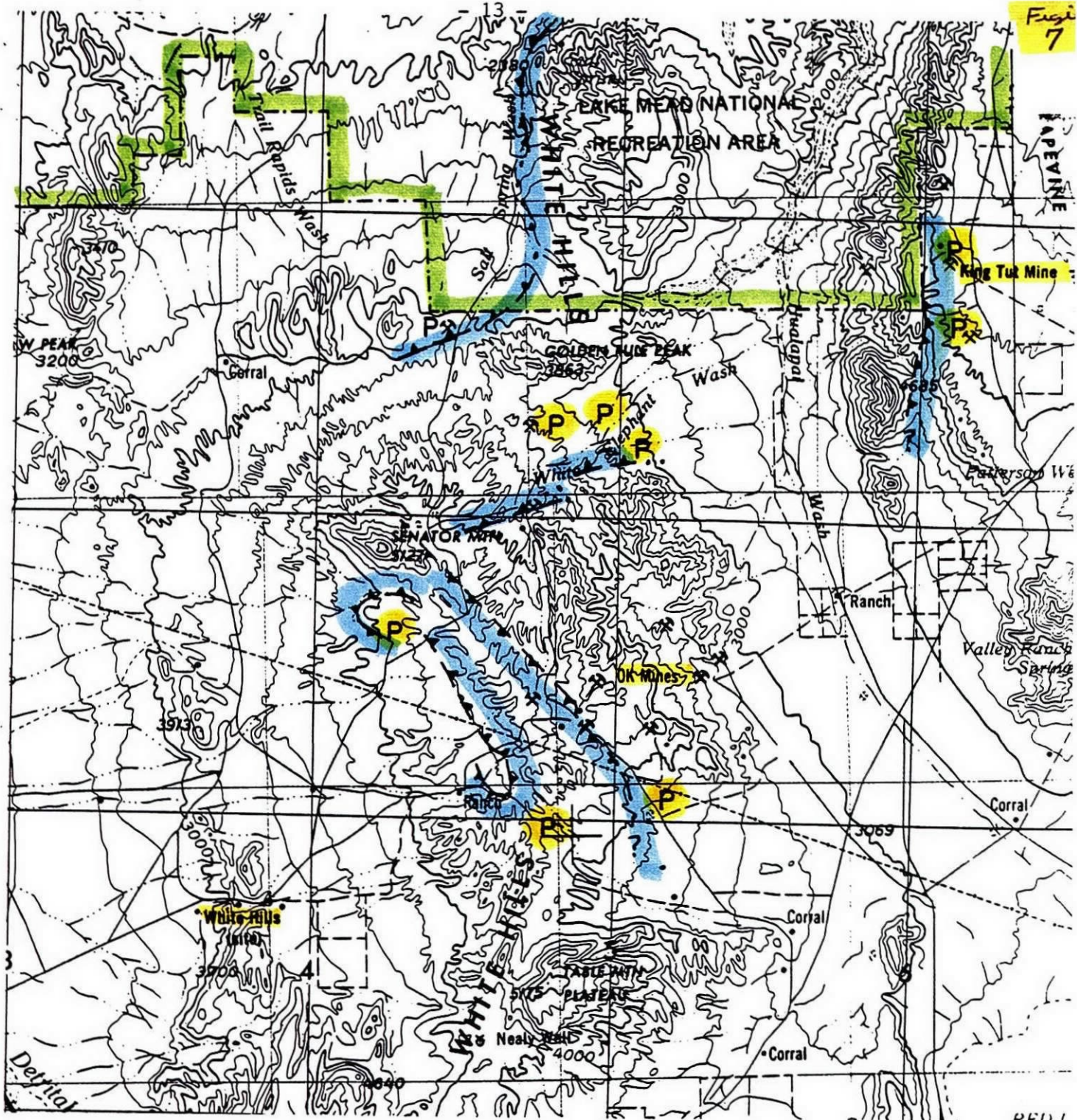
The detachment fault related mineralization, exemplified by that in the vicinity of the Cyclopic mine consists of diffuse, non-vein, epithermal gold mineralization hosted by intensely sheared and brecciated rocks in the middle plate of the detachment fault zone and in fault breccias in overlying upper plate rocks. Values are dominantly gold with little or no associated silver or base metals. The mineralized zones exhibit associated siderite-chlorite-hematite alteration, fine-grained hematitic limonite, anomalous As, Hg, W, and Pb and little associated sulfides or silica.

The quartz breccias described from the Cyclopic Mine appear to be earlier white quartz vein or pegmatitic material caught in the detachment fault, thoroughly brecciated and later recemented by clear druzy quartz that accompanied the epithermal mineralization. Gold values are specifically related to the later quartz and are much more extensive in associated clay altered brecciated rock matrix. Exploration near the Cyclopic mine indicates that the larger-scale mineralization occurs in elongate tabular zones with steep-dipping margins within the sub-horizontal detachment fault zone. The mineralized zones are up to several hundred feet wide and thick and several thousand feet in length. They are parallel, probably occur in an en echelon fashion, and contain both extensive lower-grade gold values (.02 - .05 oz Au/T) and less-extensive higher-grade zones of .10 - 1.0 oz Au/T.

The epithermal, detachment fault-related gold mineralization is extensive. It is known over a distance of more than six miles along the Gold Basin detachment fault; it occurs in high-angle faults in upper plate rocks eight to ten miles west of the Cyclopic Mine, and it probably also occurs along the Lost Basin Detachment Fault and on Salt Spring Wash along the northern extension of the Gold Basin Detachment Fault. Near the Cyclopic Mine there are at least two parallel elongate northwest-trending mineralized zones with a combined width of 300 to 400 feet within the approximately 3,000 foot wide partial exposure of crushed and brecciated rocks of the middle plate of the detachment fault zone. Similar, but narrower mineralized zones are exposed near the Fry and Senator Mines.

Gold Placers *Figure 7*

Placer gold was discovered at Lost Basin and White Elephant Wash in the early 1930's, but production has been limited to intermittent small-scale dry washers and several failed attempts at larger-scale mining at Lost Basin. The placer gold concentrations occur in thin recent gravels resting on older consolidated and caliche cemented gravels and are not associated with major drainage systems, well washed gravels, or other features considered favorable for placer gold accumulation. The distribution of gold placers is shown both on the large-scale 7½ minute sheets and on an accompanying page size map. The placer gold deposits and prospects occur as: *Figure 7*



PLACER GOLD DEPOSITS
GOLD BASIN - LOST BASIN

MINING DISTRICTS
Scale 1" = 3 miles

P

Placer Gold Deposit

Detachment Fault Zone



1. Limited, small-scale placer prospects in narrow washes down-slope from eroded veins.
2. Extensive placer gold concentrations, (King Tut, White Elephant Wash, etc.) that are down-slope from a projected eroded detachment fault zone, particularly where the Late Tertiary fanglomerates have been removed and the older Tertiary surface has been exhumed by recent erosion. This association indicates that the placer accumulations are probably a reflection of lode gold mineralization in the detachment fault zones.

The Lost Basin placers have been extensively explored but there is little reliable data on the grade and extent of placer values and there is no data available on those in White Elephant Wash. The placer deposits do not appear to be of economic significance. Available data suggests that at Lost Basin placer gold values of .01 to .03 oz Au/yd occur in restricted, thin, recent alluvial channels and that older conglomerates contain .0015 oz Au/yd or less.

Exploration Considerations

The detachment fault-hosted epithermal gold mineralization is more important and has a greater exploration potential than other types of mineralization in the Gold Basin - Lost Basin Mining Districts. Mineralized zones similar to those known, but somewhat more extensive and higher grade, or a combination of several related zones of mineralization would provide an exploration target with a potential in excess of several hundred thousand ounces of contained gold. Past exploration for concealed mineralization has been limited and there is a favorable exploration potential for epithermal gold mineralization hosted by the intensely sheared middle plate unit of the detachment fault zone and concealed beneath upper plate rocks or post-ore Late Tertiary fanglomerate.

The known vein and episyenite occurrences do not have the size potential to be of interest. However, the possibility that more extensive mineralization could occur in concealed larger episyenite pipes or dikes, or wide zones of brecciation and shearing should be considered in future exploration of the area.

Exploration Activity and Land

The Gold Basin - Lost Basin districts are in the railroad checkerboard of Mohave County and alternate sections throughout the area are owned by the Santa Fe Railroad. Exploration access to the northern part of the districts is limited by the Lake Mead National Recreation Area although leases reportedly can be obtained from the Park Service. Other major land holders include American Heavy Minerals holding 176 lode and 92 placer claims along the detachment fault in the eastern part of the Lost Basin district and the Consolidated Rhodes - Toltec venture that is believed to hold approxi-

mately 10 sections in unpatented claims and 7 sections leased from Santa Fe along the Gold Basin detachment fault in the vicinity of the Cyclopic and Fry mines.

Since 1980, exploration activity has been focused on the Lost Basin properties of American Heavy Minerals (Apache Oro) and the Gold Basin detachment fault zone in the vicinity of the Cyclopic and Owens mines. American Heavy Minerals states that drilling at Lost Basin was poorly conceived and results are not representative or reliable. However, the gold values reported indicate widespread gold mineralization. Most of the earlier drilling along the Gold Basin detachment fault was positioned on exposed mineralization in or near the lower plate of the fault and did not explore for non-outcropping mineralization concealed by post-ore fanglomerate or upper plate rock units. Kennecott's recent program included widespread geochemical sampling and limited drilling in the immediate vicinity of exposed mineralization at two prospects near Senator Mountain. The only exploration that has attempted to explore for mineralization concealed by post-ore fanglomerate or upper-plate rock units was that near the Cyclopic Mine by U.S. Borax in 1982, and the later continuing program by Toltec and Consolidated Rhodes.

Exploration Concepts and Areas of Interest

Exploration concepts that could be of value in the area include:

- (1) Localization of the detachment-hosted mineralization in the middle plate unit of intensely-sheared, brecciated, and crushed rocks and by northwest-trending, sub-surface, tear faults and related tensional fractures.
- (2) Preservation of gold mineralization within the non-resistant middle plate unit where it is concealed by post-ore cover or upper-plate rock units.
- (3) Localization of mineralization by the chemical/physical influence of different rock types within the intensely sheared and brecciated middle plate unit of the detachment fault.


There was no data on the use of geophysics in the area or the potential application of various geophysical methods. There is a geochemical association of introduced mercury, arsenic, and tungsten with the epithermal gold mineralization and geochemical surveys are of value in defining large-scale patterns and trends of mineralization. A combination of geophysical surveys that would indicate mineralized zones or sub-surface features controlling mineralization with surface geochemical sampling within and above favorable lithotectonic host horizons may be useful in exploration for concealed gold mineralization.

Areas of potential exploration interest that appear to be reflected by northwest structural trends and/or placer gold occurrences include:

- (1) The Cyclopic - Senator Mountain part of the Gold Basin detachment fault zone and projections to the southeast and northwest.

- (2) The concealed Gold Basin detachment fault zone in the area south of the Cyclopic Mine and Senator Mountain.
- (3) The Lost Basin detachment fault zone.
- (4) The Gold Basin detachment fault zone in the White Elephant - Salt Spring Wash area north of Senator Mountain.

Respectfully submitted,



Russell M. Corn

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APPENDIX

Summary of Known Mineralization and Exploration History

Larger Mines and Prospects

Gold Basin - Lost Basin Mining Districts

LOST BASIN DISTRICT

Placers

King Tut Placer, Lone Jack Placer

Secs 27, 33, 34, T30N, R17W, Secs 4, 9, 10, 15, 16, T29N, R17W

Placer gold was discovered in 1931-1932 and is concentrated in thin recent gravels resting on caliche cemented gravel and Late Tertiary fanglomerate, downslope and adjacent to an eroded detachment fault zone. Placer gold deposits at Lost Basin include:

- (1) Placer gold in Quaternary channel gravels: Available data indicates that these placers may have values of .01 to .03 oz Au/yd in small and very restricted alluvial channels.
- (2) Placer gold in Tertiary conglomerates: Data indicates that recoverable gold values in any substantial volume of material is less than .0015 oz Au/yd and that these placers are not economically significant.

The King Tut Placer area is held by American Heavy Minerals (Apache Oro) and has been explored by several groups since the late 1960's. The exploration history and results include:

AZ DMR Files, Rept. - 1933

Placer reserves estimated at 300,000 yds @ .02 oz Au/yd.

AZ DMR Files, Rept. - 1936

Estimated placer potential of several million yds @ .02 oz Au/yd. Gold occurs in thin channels on older caliche-cemented gravels.

1969 Western Nuclear - Churn Drilling of placer ground. Five foot intervals from drill holes were processed and panned to concentrate recoverable gold. Four of the 225 samples processed contained recoverable values of .0014 oz. gold (50¢/yd at 350/oz Au) while the others had either smaller amounts or no recoverable gold.

1969 Apache Oro - Nine 80 foot deep Hammer holes were drilled in Secs. 33, 4 and 9. Composite assays of the entire 80 foot interval drilled in each hole were:

8 holes - .01 oz Au/ton or less

1 hole - .02 oz Au/ton

1 hole - .05 oz Au/ton

(Reliability of the assays is not known.)

1974-1975 Vanguard Partners/Western Contracting -- Backhoe Trenches of placer gravel. Reported values were extremely variable. Reserves reported were 1½ million yards averaging .0012 oz recoverable gold (40¢/yd at 350/oz Au). One 243 foot DDH in NW cor. Sec. 9. No data on core assays. (Rumored sludge assay of .083 oz Au).

- 1976 Resources International Partners - Sampled placer gravels with several hundred percussion drill holes (results are not known -- data not available).
- 1977 Resources International Partners attempted to cyanide heap leach placer gravels and recovered a minor amount of gold in a wet placer operation.
- 1979 Resources International sampled veins and mineralized breccias in exposed Precambrian rocks. No reliable data is available on this sampling. Deaderick reports numerous .01 oz - .02 oz Au/T values from partial assays of shallow holes in Precambrian rocks.
- 1980 AMAX sampled placer gravels with 16 drill holes. Recoverable values were all less than .01 oz gold/yd.
- 1981 Charter Gold Corp. sampled placer gravels by drilling. Results were not reported.
- 1986 Channel Mining drilled 32 churn drill holes to an average depth of 30 feet in the eastern fanglomerate and southern alluvial gravels. All holes were reported as blank.
- 1986 Leased to Santa Fe Minerals Corp - exploration results are not known. Warren Mallory, (American Heavy Minerals) presents numerous reasons why gold was not recovered during the previous drilling and why the previous drilling results were unreliable, but he does not have any definitive data on the extent or grade of the placer values.

Veins

Apache Oro claims - drilled by Apache Oro and Resources International Partners (RIP) in 1976-1979. Over 100, 50 ft. percussion holes, 24 holes at an average 80 foot depth, and one 240 foot core hole were drilled in Precambrian rocks. Partial assays reported by Deaderick show widespread .01 - .12 oz Au but the reliability of assays is questionable.

Bluebird Mine - AZ DMR report - 1915 - vein - average width 5 ft., avg grade .35 oz Au/T.

Climax Mine - AZ DMR report - 3 ft. vein, 2,000 ft. long, .40 - .50 oz Au/T. Apache Oro reports that drilling to a depth of 50 feet outlined 12,800 tons @ .51 oz Au/T.

Scanlon Mine - AZ DMR report - vein, .15 oz Au/T to 1.2 oz Au/T.

GOLD BASIN DISTRICT

Episyenite - Secs. 34 & 35, T28N, R18W.

Drilled by Santa Fe Mining in early 1980's. Gold values (.10 oz Au/T) and size (narrow dike and 10 ft. diameter pipe) are similar at depth to values and size of surface exposure.

Veins - El Dorado - Malco - Excelsior

Secs. 21 & 22, T28N, R18W.

AZ DMR reports - veins are 8 inches to 3 feet wide. Ore shoot reported by Schrader was 20 inches wide @ .50 -.75 oz Au/T.

1988 - Heap Leach by Clyde Hutcheson, Sedona, Ariz. - 30,000 tons of ore @ .076 oz Au/T.

Gold Hill Mine - Secs 15,16,17, T29N, R18W.

AZ DMR records

Narrow E-W trending quartz-siderite-pyrite vein. Gold is concentrated in narrow zones of later shearing and brecciation.

1940 - shipments of 20 to 40 tons each @ .75 to 1.25 oz Au/T.

1970's - drilled by Hecla. Best intercept 27ft. @ .17 Oz Au/T.

Others - 15 ft. @ .025 oz Au/T.

10 ft. @ .03 oz Au/T

Late 1980's - Trenched & drilled by High Frontier Resources (?)

Golden June Mine (Red Norse)

SE $\frac{1}{4}$, Sec 29, T28N, R18W.

AZ DMR records.

Vein - 1 to 3 ft. wide @ .30 - 1.0 oz Au/T.

Golden Rule Mine

NW $\frac{1}{4}$, Sec 29, T28N, R18W.

Schrader describes vein as 2 $\frac{1}{2}$ foot brecciated quartz vein avg. .50 oz Au/T.

LPM Mine (Queen Ann)

NW $\frac{1}{4}$, Sec 4, T27N, R18W

AZ DMR records

Vein - 18 inches to 2 feet wide @ .30 to .50 oz Au/T. Shipped 500 T @ .30 oz Au/T.

Several holes drilled by Saratoga Mines in 1981 (?). Reynolds Metals drilled 15+ shallow holes in 1990 - results reportedly were discouraging.

Uno Mine (Nineteen Forty)

Secs. 16, 17, T28N, R18W.

Vein and shear zone @ 45° dip. High Frontier Resources & Kennecott drilled 15 holes in area during 1990. One vertical hole contained 40 ft. @.112 oz Au/T

which included 10 ft. @ .30 oz Au/T. Results of other holes were discouraging.

Tertiary Detachment - Hosted Mineralization

Cyclopic

Sec 30, T28N, R18W

Currently leased to Toltec-Consolidated Rhodes Venture

AZ DMR records - Elongate, sub-horizontal, mineralized zone (3,000 ft. long), several hundred feet wide and up to 50 ft. thick. Production in early 1900's and again in 1930's is estimated at 50,000 tons @ .20 - .35 oz Au/T - tailings average .06 oz Au/T.

1938 report by Manta de Oro - tonnage estimate @ more than 100,000 T @ .10 oz Au/T.

Other reports by Crabtree and Billings estimated proven reserves of 100,000 - 200,000 tons @ .10 -.20 oz Au/T and a potential of 1,000,000 to 2,000,000 tons.

The Cyclopic was trenched and sampled extensively by Wyman & King in the 1970's and drilled by Inspiration, C.F. Millar, and AMOCO. Reserve estimates include:

<u>Estimator</u>	<u>Indicated</u>	<u>Possible</u>	<u>Lower-grade Potential</u>
Wyman - King	300,000 T @ .15 oz Au/T		12,000,000 T @ .06 oz Au/T
McIntyre	67,000 T @ .28 oz Au/T	150,000-300,000 T @ .15 oz Au/T	Several million tons @.05 oz Au/T.
Millar	800,000 T @ .04 oz Au/T		
Don Jenkins (Gold River- Mtn States)	Drill proven - 150,000 T @ .07 oz Au/T.		

Fry Mine

Sec 25, T28N, R19W

Currently leased to Toltec-Consolidated Rhodes Venture.

AZ DMR records

Inclined shaft is 200 ft. deep. Ore was found in narrow NW trending and NE trending shear zones.

E.H. Crabtree report (1930's) estimated reserves of 94,000 T @ .60 - 1.0 oz Au/T.

Toltec (1991) reports trench samples of 10 ft. @ .67 oz Au/T and .97 oz Au/T over 5 ft. width.

Red Cloud Prospect

Sec 25, T28N, R19W and Sec 31, T28N, R18W.

Currently leased to Toltec-Consolidated Rhodes Venture.

The northwest-trending mineralized zone is 100 to 150 feet wide, 100 to 200 feet thick and more than 5,000 feet long. Road cut samples at the east end of the

zone show 60 ft @ .05 oz Au/T and an adjacent 60 ft @ .01 oz Au/T. Toltec's drilling results on the western projection of the mineralized zone include one hole with 80 ft. @ .35 oz Au/T.

Owens Mine

NW $\frac{1}{4}$, Sec 1, T28N, R19W

Tertiary detachment-hosted mineralization. The mineralization consists of numerous erratic small veins & veinlets of vuggy quartz, pyrite, chalcopyrite, siderite and specularite. The mineralized zone is at the edge of cover, poorly exposed over a distance of 700 ft. at the base of the detachment fault, and is reported to be a zone 150 to 200 ft. thick that dips north at a low-angle. Contained values are from both copper and gold with sample data indicating values of .10 to .25 oz Au/T

Drilled by MAPCO in the early 1980's. Nerco drilled the prospect in the mid 1980's. American Copper and Nickel drilled in the area and one mile to the southwest along the base of the detachment fault in 1989-1990.

MAPCO's drilling indicated a mineralized zone that expanded with depth, and near-surface mineralization of 300,000 tons @ .03 oz Au/T. The results of later drilling by Nerco and American Copper and Nickel are not known.

White Hills District

T27N, R20W

Tertiary, epithermal veins 1 to 3 ft. wide, strike WNW and dip north @ 25-75°. The veins are thoroughly oxidized and consist of Fe & Mn oxides, vuggy qtz & clay in sheared gneiss and lamprophyre. The ore mineral was cerargyrite and the veins probably averaged less than 25 oz Ag/T with higher-grade values due to supergene enrichment. Production is estimated at 6-8 million ounces silver and 5,000 ounces gold. The gold/silver ratio is extremely variable with some of the northern veins carrying gold values of up to .50 oz. The district was evaluated and drilled by Charles Steen in 1962-1963. The mines were opened by Arizona Silver-Corval in the early 1980's and closed due to the low price of silver in the late 1980's.

GEOLOGY AND EXPLORATION POTENTIAL
OF THE GOLD BASIN AND LOST BASIN MINING DISTRICTS
MOHAVE COUNTY, ARIZONA

Russell M. Corn

May, 1991

GEOLOGY AND EXPLORATION POTENTIAL
OF THE GOLD BASIN AND LOST BASIN MINING DISTRICTS
MOHAVE COUNTY, ARIZONA

Summary

The geology of the Gold Basin and Lost Basin Mining Districts, northern Mohave County, Arizona is dominated by regionally extensive, sub-horizontal detachment fault zones that consist of a 200 to 400 foot thick zone of coalesced listric faults and thoroughly sheared and brecciated rocks. Geologic investigations indicate that the Gold Basin Detachment Fault Zone is a favorable host for superimposed epithermal gold mineralization and that the Gold Basin District has a favorable exploration potential for concealed, detachment-hosted, bulk-tonnage gold mineralization. The epithermal detachment-hosted mineralization occurs as linear, tabular lenses of diffuse, non-vein mineralization with little associated silica or sulfides. Mineralized lenses are up to several hundred feet or more wide and several thousand feet in length. Past exploration in the district has been concentrated in the immediate vicinity of exposed mineralization and has resulted in an indicated possible gold resource of approximately 100,000 ounces. Any substantial mining operation in the district will require the discovery of larger-scale mineralization concealed beneath post-ore and structural cover and exploration should be directed toward this objective. Half of the land in the district is owned by Santa Fe, and exploration tools and methods that could be used to detect concealed mineralization have not been defined. A thorough appraisal of the land and other exploration problems and a study of exploration tools and methods that can be used to indicate the presence of concealed mineralization are recommended before any substantial exploration effort is undertaken.

General

This report is intended as a final report summarizing the results of geologic investigations carried out during the period January through April, 1991 in the Gold Basin - Lost Basin Mining Districts of northern Mohave County, Arizona. Separate reports were submitted earlier on specific areas investigated in detail and should be referred to for more detailed descriptions of the geology and mineralization in these areas. An earlier report, Geology and Gold Mineralization, Gold Basin - Lost Basin Mining Districts, dated February, 1991, described the results of geologic map compilation and literature research in the Gold Basin - Lost Basin Mining Districts. Brief descriptions of individual mines, past production, and the width and grade of the various veins in the Gold Basin and Lost Basin Districts are included in an appendix to the February report. Separate reports describing specific investigations in the Lost Basin and Gold Basin Districts include:

1. Review of American Heavy Minerals Lost Basin Property.
2. Geologic Investigations and Sampling, American Heavy Minerals Lost Basin Property.
3. ACNC Drill Results, Owens Mine Area.
4. Geology and Exploration Potential of the Owens Mine Area.

Private reports and data from other companies that were copied and incorporated

in the files are listed in an appendix to this report.

The area included in the geologic study of the Gold Basin - Lost Basin Mining Districts is located in northern Mohave County, Arizona and encompasses the Garnet Mountain and Senator Mountain 15' quadrangles and the adjacent northern half of the White Hills 15' quadrangle and the MT Tipton NW 7½' quadrangle. The geologic investigations were predominantly a review and compilation of published geologic literature, previous geologic studies and results of exploration by other companies. Field work was very limited except in areas of specific investigations. The available geologic maps and data on geology and mineralization were integrated and are presented on a uniform 1:24,000 scale topographic base. Sections that illustrate the "thin-skinned" deformation and the complex detachment faulting in the area accompany this report. Also accompanying this report are sketch maps showing the distribution of trenches, drill holes, and indicated mineralization at the Cyclopic and Red Cloud properties in the Gold Basin District.

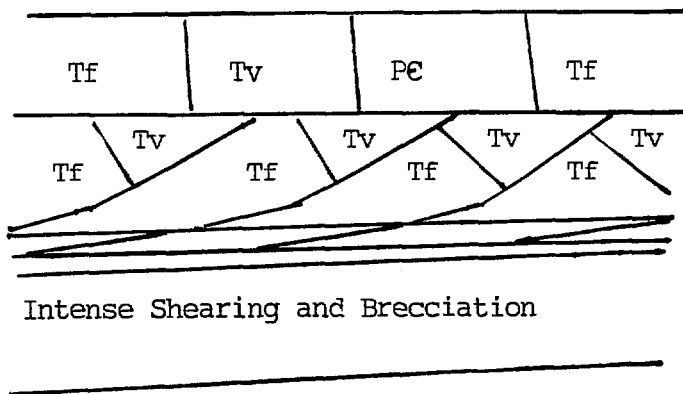
The Gold Basin - Lost Basin districts are part of the Santa Fe Railroad land grant checkerboard of northern Mohave County with alternate sections throughout the area owned by the Santa Fe Railroad. Exploration access to the northern part of the area is limited by the Lake Mead National Recreation Area.

Precious metal mineralization is the only indicated mineralization of interest, and exploration activity since 1980 has been concentrated on the placer gold deposits at Lost Basin and on the detachment-hosted epithermal gold mineralization at Gold Basin. Current exploration activity includes Kennecott's geologic studies, their 1990 drilling of two small prospects in the vicinity of Senator Mountain, and the detailed sampling and drilling program carried out by the Toltec - Consolidated Rhodes venture at the Cyclopic - Red Cloud - Fry mines at Gold Basin. The venture recently terminated their option agreement on the Cyclopic property and may also terminate their exploration program on adjacent prospects. A tabulation of indicated and potential detachment fault-hosted gold mineralization in the district is included in this report, together with sketch maps illustrating the distribution of drilling at the Cyclopic and Red Cloud properties. The ACNC and Mapco drill hole data on the Owens Mine area has been presented in separate reports.

Geology

The geology of the Gold Basin - Lost Basin area is dominated by regionally extensive, Mid-Tertiary, low-angle, detachment-type faults. The detachment fault zones, as shown on the geologic maps and accompanying sections, comprise a 200 to 400 foot thick zone of coalesced listric faults and thoroughly sheared and brecciated rocks. The fault zones can be visualized as a sub-horizontal, stratiform interval of intense shearing that is a favorable host for later mineralization, sandwiched between overlying structurally-rotated listric fault slices of upper-plate rock units and underlying competent, lower-plate basement rocks. The detachment fault zones are illustrated on the 1:24,000 scale maps by (1), the indicated low-angle fault above competent basement rocks and (2), the low-angle fault at the base of overlying structurally-rotated upper-plate rocks. The upper and middle plates of the fault zone are not easily distinguished where intermediate fault-bounded slices of competent Precambrian rocks occur in the upper part of the detachment fault zone as in the area southwest of the Cyclopic Mine.

SCHEMATIC SECTION THROUGH GOLD BASIN DETACHMENT FAULT



UPPER PLATE
Structurally rotated &
displaced rock units

MIDDLE PLATE
Thin sheets of
displaced rocks &
coalesced listric faults

LOWER PLATE
Competent Basement

The detachment faults mantle uplifted areas of competent basement rocks comprised of Proterozoic, amphibolite-grade gneissic metamorphic rocks that were intruded extensively by post-metamorphic Precambrian granites, and northwest of the Cyclopic Mine, by a Cretaceous monzogranite stock. Geologic relationships indicate that the uplifted basement was denuded by the detachment faulting with slices of characteristic basement rock types mixed with rotated Tertiary fanglomerate and volcanic rocks in the upper plate units.

Pre-detachment Tertiary rocks include a thick sequence of structurally-rotated volcanic and volcanoclastic rocks and fanglomerate. Lamprophyre dikes and sills are the latest pre-mineral Tertiary rocks. They are associated with the White Hills veins and are common along the detachment fault. In the detachment fault zone, they are sheared, predate at least some of the fault movement and are altered and mineralized. Post-detachment rocks include the Late Tertiary "Muddy Creek" sequence of gently-dipping fanglomerate, basalt, limestone, mudstone and evaporites which were unconformably deposited on a post-mineral erosion surface. One of the major problems with earlier mapping in the area was that the pre-detachment and post-detachment fanglomerates were not differentiated. Although lithologically similar, the older fanglomerate is structurally rotated, associated with volcanic rocks and contains steeply-dipping rhyolitic tuffs, while the later fanglomerate is gently-dipping, post-mineral, and was draped onto the Tertiary erosion surface.

The detachment faulting is regional in extent and dips gently to the south and west with the fault-bounded slices of upper plate rocks increasing down-dip both in number and thickness. As shown on the geologic maps and the accompanying sections, the fault-bounded, upper-plate slices include Precambrian granite and gneiss as well as the Tertiary rocks, and Precambrian rocks probably make up the majority of the upper plate sequence. Wilkins, AGS 1984 Field Trip Guidebook, Kingman Area, reported that the Gulf drill hole, GDV-3, on the west side of Detrital Valley, penetrated Late Tertiary sediments and encountered 773 feet of gneiss that was cut by repeated low-angle listric faults with a characteristic periodicity of one major fault in each one hundred foot interval.

The accompanying sections are an attempt to illustrate the complex nature of the imbricate faulting, the sub-horizontal nature of the detachment fault zone and the regional sub-surface extent of the fault zone and overlying fault-bounded slices of upper plate rocks. The sections are simplified since there is very little sub-surface data available in most of the area. The east-west section extending from the Cyclopic Mine west across Detrital Valley into the Black Mountains is based on geologic observations in the Gold Basin area supplemented by Gulf drill hole and map data in the Detrital Valley that was obtained from Joe Wilkins, and by R.E. Anderson's mapping in the Black Mountains (USGS GQ 1394). As illustrated on the east-west section, the sub-horizontal detachment fault zone dips gently to the south and west accompanied by an increasing thickness of overlying fault-bounded slices of upper-plate rocks. The fault zone and overlying upper-plate extend for perhaps one mile under shallow pediment gravels west of Bug Hill and is then down-dropped more than 2400 feet into Detrital Valley and overlain by a thick playa lake evaporite sequence. As indicated by the Gulf drill hole data, the Precambrian metamorphic rocks in the Black Mountains are not the competent basement but instead are within the upper plate which consists of imbricate fault slices of Precambrian rocks as well as Tertiary volcanics and a complexly dissected porphyry copper alteration system.

In essence the detachment terrane can be considered as a layered sequence of fault-bounded lithotectonic units separated from underlying competent basement rocks by the detachment fault zone of imbricate faulting and intense shearing. The detach-

ment fault zone at the base of the sequence is the zone of most intense deformation and permeability, and presents a favorable host environment for later superimposed mineralization, particularly where rocks involved are brittle or chemically reactive. As shown on the sections, the gently-dipping detachment fault zone should be present within reasonable drilling depths for a distance of several miles from its outcrop.

In the Cyclopic-Senator Mountain area, the Gold Basin Detachment Fault, upper-plate rock units, and gold mineralization all exhibit a northwest strike direction in contrast to the general north-south strike direction of upper-plate rocks to the south and west. Field relationships indicate that along the northwest-trending zone there is a warp in the base of the detachment fault and the zone of intense shearing thins or pinches out against the competent basement. The relationships suggest the presence of concealed sub-surface tear faults that influenced both detachment faulting and subsequent gold mineralization.

Mineralization

Precious metal mineralization is the only type of mineralization that has ever been of interest in the Gold Basin - Lost Basin Mining Districts. Epithermal silver veins characterize the White Hills district while gold is the dominant metal of interest elsewhere in the area. Metallogenic relationships and the distribution and characteristics of the various types of mineralization were summarized in the February 1991 report and have been described in detail in USGS Professional Paper 1361. Several separate ages of gold mineralization, Precambrian, Cretaceous and (post-detachment) Mid-Tertiary are reported and the various types and ages of mineralization are shown on the compiled geologic maps of the area. Gold occurs as placer deposits, in narrow, well-defined veins, in small episyenite pipes and dikes, and in diffuse, non-vein, epithermal mineralization hosted by the low-angle, intensely sheared, detachment fault zones and overlying high-angle breccias.

The larger placer gold deposits are located downslope from eroded detachment faults where recent erosion has removed the Late Tertiary conglomerate and exhumed the older Tertiary erosion surface. Spatial relationships suggest that in many instances the original source of placer gold was lode gold mineralization in the eroded detachment fault zone. Placer deposits at Lost Basin were recently explored by Billiton Minerals with negative results and available data indicates that none of the gold placers in the area are of potential interest. The gold-bearing episyenite dikes and pipes (desilicated metasomatic rocks with disseminated pyrite) commonly contain values of .10 oz Au/T. However, all the episyenites known are relatively small and not of economic significance.

The gold-bearing quartz-siderite veins, dated as Cretaceous by the USGS, are relatively narrow and gold values of interest are concentrated in limited zones of later shearing and brecciation. Available data indicates that known veins contain limited tonnages averaging .20 to .30 oz Au/T over widths of three to five feet. The veins exhibit associated chlorite-siderite alteration and consist of white quartz, coarse-grained carbonate, (ankerite-siderite) and variable, but generally minor amounts of coarse-grained sulfides, pyrite, galena and chalcopyrite. Higher-grade values are in limited shoots and are closely related to superimposed brecciation, fine-grained hematitic limonite, and clear druzy quartz. The higher-grade brecciated quartz vein material is often similar in appearance to the quartz breccias in the detachment fault zone at the Cyclopic Mine. A recent discovery at Lost Basin of gold filling fractures in sideritized rock and not directly associated with white quartz vein material, suggests that the higher-grade values in the veins are superimposed on

earlier mineralization and may be related to the period of Mid-Tertiary, epithermal mineralization.

The detachment-hosted epithermal gold mineralization in the Gold Basin District consists of diffuse, non-vein mineralization localized in sheared and brecciated zones within the detachment fault zone and in high-angle fault breccias in overlying upper-plate rocks. Values are dominantly gold and the mineralized zones exhibit associated siderite-chlorite-hematite alteration, fine-grained hematitic limonite, anomalous As, Hg, W and Pb and little evidence of associated sulfides or silica. Known mineralization is completely oxidized and the mineralized zones are non resistant and commonly concealed by alluvium or surface debris. The epithermal mineralization is superimposed on the detachment fault zone and overlying upper-plate units and is probably localized by sub-surface tear faults and renewed post-detachment fracturing and shearing of overlying rocks.

As exemplified by the Cyclopic and Red Cloud properties and shown on the accompanying sketches, larger-scale mineralization occurs as parallel, and en echelon, elongate, tabular, rod-like lenses up to one hundred to several hundred feet wide and thick with related lenses of mineralization occurring over a distance of several thousand feet. The larger mineralized zones exhibit extensive lower grade values (.02 - .05 oz Au/T) and include limited higher-grade intervals of .10 - .50 oz Au/T. Narrow 5 to 10 foot wide zones of localized post-detachment shearing contain similar higher-grade values that are not accompanied by more extensive mineralization.

Mineral Potential

Geologic investigations were carried out on several of the larger prospects in the area and separate reports have been submitted on the American Heavy Minerals property at Lost Basin and the Owens Mine Area in the Gold Basin District. The following discussion of the mineral potential in the area includes brief summaries of the results of these investigations and a tabulation of rough "order of magnitude" estimates of the extent and grade of the known detachment-hosted mineralization in the Gold Basin District. The known gold deposits in the area do not have sufficient potential to support a substantial mining operation.

Lost Basin District

The results of geologic investigations, sampling and evaluation of previous drilling in the Lost Basin District indicate that the American Minerals property does not have sufficient exploration potential to be of interest. Placer Deposits with appreciable gold values are limited to thin, surficial, recent alluvial gravels and only minor amounts of gold occur in the larger volume of Late Tertiary conglomerate. The relatively-narrow, gold-bearing, quartz-siderite veins at Lost Basin are not of economic interest and the geologic examinations and sampling carried out near the Lost Basin Detachment Fault Zone and adjacent to post-mineral cover along its northward projection, indicate that there is little likelihood of concealed, detachment-hosted or other bulk-tonnage gold mineralization on the American Heavy Minerals Lost Basin property.

Gold Basin

The Gold Basin detachment Fault Zone is an extensive, gently-dipping, favorable host for gold mineralization. Where exposed, it is marked by numerous prospects, scattered mines and widespread anomalous gold values with the large-scale pattern emphasizing the occurrence of gold mineralization at the margin of post-mineral and structural cover. Approximately 60 to 70 percent of the projected outcrop edge of the non-resistant detachment fault zone is concealed beneath post-ore fanglomerate and alluvium and even in exposures, the upper part of the zone of intense shearing is almost always covered by surface debris and talus from upper-plate rock units. Previous exploration has been concentrated in the near vicinity of exposed mineralization and very little exploration has been carried out in areas where the detachment fault zone is concealed.

The accompanying tabulation of gold resources summarizes the known and indicated detachment-hosted gold mineralization in the Gold Basin district and includes notes on the possible extent of the mineralization. A rough estimate of the possible gold resource contained in exposed and known mineralization is approximately 100,000 ounces. This resource is located primarily in the Cyclopic - Red Cloud - Fry area and a substantial part of the resource has resulted from recent exploration in the poorly-exposed, upper part of the detachment fault zone. As illustrated on the sketches and the geologic maps, gold mineralization occurs as elongate, northwest-trending, tabular or rod-like lenses superimposed on and hosted by the detachment fault zone. The mineralized lenses are parallel, spaced at an indicated regular interval of 1,000 to 1,200 feet and include both narrow intervals with values up to .50 oz gold and larger 100 to 150 foot wide zones up to 150 feet thick, averaging .02 to .05 oz gold.

The distribution of previous drilling and extent of mineralization in the Cyclopic - Red Cloud area is illustrated on accompanying sketch maps and the potential of the Owens Mine area is described in a separate report. The distribution of values and the continuity of better-grade values within the mineralized zones is not known. Mineralization exposed in a road cut at the Red Cloud prospect (Toltec Zone No. 1) included 60 feet @ .05 oz Au/T accompanied by an adjacent 60 feet @ .01 oz Au/T. Production and reserve estimates for the Cyclopic Mine indicate that the higher-grade material mined in the early 1900's, (.20 to .35 oz Au/T), made up 5 to 10 percent of the total volume of mineralization and contained approximately 25 percent of the total gold. Data from the Owens Mine area shows a large volume of weak gold mineralization as an envelope around higher values in the detachment fault zone, while higher-grade values at depth occur in isolated veins. The outcrop pattern of mineralization at the Red Cloud prospect and data from the Owens Mine Area suggests that the mineralized zones are offset along late northeast-trending faults, further complicating the continuity of better-grade values.

The geologic features that control the epithermal mineralization have not been defined. Mineralization appears to be localized by post-detachment, steeply-dipping faults and shear zones and it is probable that the known mineralized zones will continue beneath cover and that similar mineralization, perhaps at the same regular spacing noted above will occur completely concealed by upper-plate rocks or post-ore cover south and west of the Cyclopic - Red Cloud - Fry area, and elsewhere in the district. Although the drill indicated mineralization at the Owens Mine is limited, the extensive area of anomalous gold values and weak gold mineralization along the detachment fault zone suggests that this area has potential for larger-scale, bulk-tonnage mineralization where the fault zone is concealed beneath post-

Prospect/Property	Possible Extent	Possible Tons	Grade oz Au/T	Comments
Sec 24 - N & E of Fry (Toltec-Consol. Rhodes)				Poorly exposed mineralized zones NE of & N of Fry have not been tested by drilling.
Senator				Surface Au anomalies on on narrow shear zones near Senator Mine have not been drilled.
Senator (Kennecott)	5-10' wide 100' deep 1000' long		.03-.10	Prospects on narrow shear zones. One of KC wide-spac- ed drill holes reportedly encountered a substantial interval @ +.01 oz Au/T.
Bug Hills	5-10' wide 1000' long Unknown depth		.10	Mineralized, narrow high- angle fault breccias.

ore fanglomerate and alluvium. Airborne geophysical surveys are planned for the Owens Mine area and results may help in determining its potential. Known gold mineralization near the Senator Mine is localized in relatively-narrow, steeply-dipping shear zones and mineralization in the Bug Hills is localized in narrow high-angle fault breccias in upper-plate rocks. Although not of economic interest, these prospects do illustrate the extensive nature of the epithermal gold mineralization and suggest that a more favorable structural host environment in these areas could also host a bulk-tonnage gold deposit.

Exploration Potential

The Gold Basin District has a favorable exploration potential for concealed, detachment-hosted, bulk-tonnage gold mineralization. The detachment fault zone is a stratiform favorable host for superimposed gold mineralization. It is analogous to the host environment provided by a reactive silty limestone or permeable dolomite in other areas and the major exploration problem consists of determining the geologic features and conditions that have localized subsequent mineralization and the location of concealed deposits. Gold is known to occur in the detachment fault zone as diffuse, non-vein mineralization, that varies from narrow, higher-grade zones to lenses more than 100 feet wide and thick. Concealed, more intense mineralization of this type could easily occur in lenses 500 feet or more wide which would be attractive exploration targets.

There are several areas along the edge of the detachment fault zone that exhibit placer prospects, gold mineralization, extensive alteration and anomalous gold values adjacent to post-ore or structural cover, features believed characteristic of areas with favorable potential for concealed mineralization. These areas include:

1. The Owens Mine Area
2. The Senator Mine - Senator Mountain Area
3. The Cyclopic - Red Cloud - Fry Area
4. The Butcher Camp Area south and southeast of the Cyclopic - Red Cloud properties

Recommendations

The exposed, known gold mineralization is not sufficient to support a substantial mining operation and exploration should be directed toward concealed, larger-scale, detachment-hosted gold deposits. Emphasis should also be given to studies determining the controls over mineralization and the application of exploration tools, geologic, geochemical and geophysical, that would help in determining the position of concealed mineralization. The results of this type of study would be applicable not only to the Gold Basin District, but throughout the detachment terrane of the southwest.

Specific suggestions for an exploration program in the Gold Basin District include:

1. A thorough appraisal of the problems and costs of leasing or joint venturing the Santa Fe land, is advised prior to any substantial exploration effort.
2. Detailed geologic mapping of the Owens Mine area and geochemical sampling around the periphery of the post-ore cover.
3. Initial reconnaissance-type drilling of the Owens Mine Area to test geophysical anomalies, determine the thickness of cover, the position of the detachment fault zone, and the presence of alteration and mineralization within it.
4. Additional, detailed geologic mapping, sampling and appraisal of the potential for larger-scale, concealed mineralization in other areas of exploration interest along the margin of the Gold Basin Detachment Fault.

Respectfully submitted,



Russell M. Corn

APPENDIX
REPORTS ON LOST BASIN AND GOLD BASIN

Lost Basin

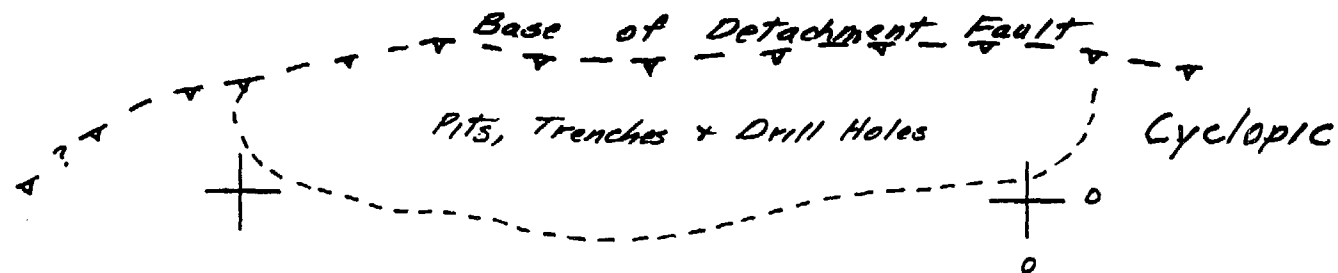
- 1967-1969 Rough drill hole logs, Assays and Spectrographic analyses - Apache Oro Corp.
- 1967 Total Intensity Airborne Magnetic and Scintillation Survey, Lost Basin Mountain Range, Arizona by Heinrichs Geoexploration Co.
- 1967 Reconnaissance Geologic Investigation Lost Basin Area, Mohave Co., Ariz. by Donald Cooley - Heinrichs Geoexploration Co.
- 1968 Electrical Geophysical Survey, Lost Basin Area, Mohave Co., Ariz. Includes I.P., Resistivity and S.P. for Gunnex Ltd by Heinrichs Geoexploration Co.
- 1974 Report on the Geology and Economic Potential of the Apache Oro Property by Paul Gilmour.
- 1974 Report on the Ford Mine by A.F. Trites for Apache Oro Corp.
- 1975 Assays from CDC Associates (questionable) and sample descriptions for Apache Oro.
- 1978 Assays and drill hole locations for R.I.P. holes. Quartz Hill and Red Basin area of Lost Basin.
- 1979 Report on the Climax Mine by Resource International Partners.
- 1980 Part of a thesis by A.J. Deaderick on the Apache Oro Mining Claims. Includes drill hole locations and assays for some of the R.I.P. holes.
- 1984 Generalized report with little detailed data on Geology and Mineralization of the Lost Basin Range by L.E. Smith for Apache Oro Corp.
- 1986 Santa Fe Mining - Geochemical sample locations and assay data - no descriptions.
- 1988 (?) Promotional Brochure and Tour Guide for Lost Basin Property for American Heavy Minerals by Warren Mallory.
- 1989 Billiton Minerals - drill hole location map and assay data.
- 1991 Sequential list of claim trespass and challenges to title of Apache Oro-American Heavy Minerals unpatented claims.

Gold Basin

- 1983 Geological and Geochemical Investigations at Gold Basin - Report by Corn and Ahern to U.S. Borax.
- 1984 Drilling Results, Gold Basin Prospect - Report by Corn and Ahern to U.S. Borax.
- 1987 Report on Owens Property, including drilling results, by Mel Lahr and Steve Mornis, American Copper and Nickel.
- 1987 Results of 1987 Drilling, Owens Project, Mohave County, Ariz. ACNC.
- 1989 Promotional report by Gordon J. Hughes for ECM, Inc. on the Roadrunner (Uno or Nineteen Forty) property.
- 1989 Promotional report by Gordon Hughes for ECM on the White Elephant Property.
- 1990 Promotional report by Gordon Hughes for ECM on the Senstor Property.
- 1984 Brief summary report by V.D. Landrum on Mapco's drilling results at the Owens Mine. Data includes geologic and drill hole location map, drill hole logs and assay results.

4000
+ 0

East Fry Shaft



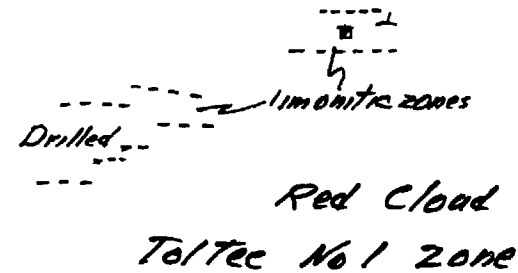
200' x 2000' zone
of anom. Au

Scale
1 inch = 500 feet

4000
+ 2000

2000
+ 2000

0
+ 2000



Floorite
Pit

T-11
55' @ .48 oz Au/t
Toltec No 2 Zone

----- limonitic
Fox Hole

Anom. Au

Sketch Map of Cyclopic - Red Cloud Area
Gold Basin District, Mohave County, Arizona
RM Carn April, 1991

4400W
+

4000 W
+

3600W
+ 3200S

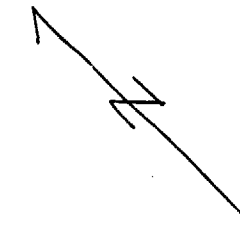
T-8
60°
limonitic
zone T-10
Fluorite Pit

0?
GBRC 91-21

GBRC 91-20
0?

Red Cloud Prospect
Toltec Mineralized Zone No. 2

Hole No. No.	Interval Feet	Length Feet	Gold Oz/T
T-11		55'	.477
GBRC-91-18	230.0 - 285.0	55.0	0.041
GBRC-91-19	300.0 - 320.0	20.0	.056
	345.0 - 380.0	35.0	.129
GBRC-91-20	No significant values		
GBRC -91-21	No significant values		



+ 3600S

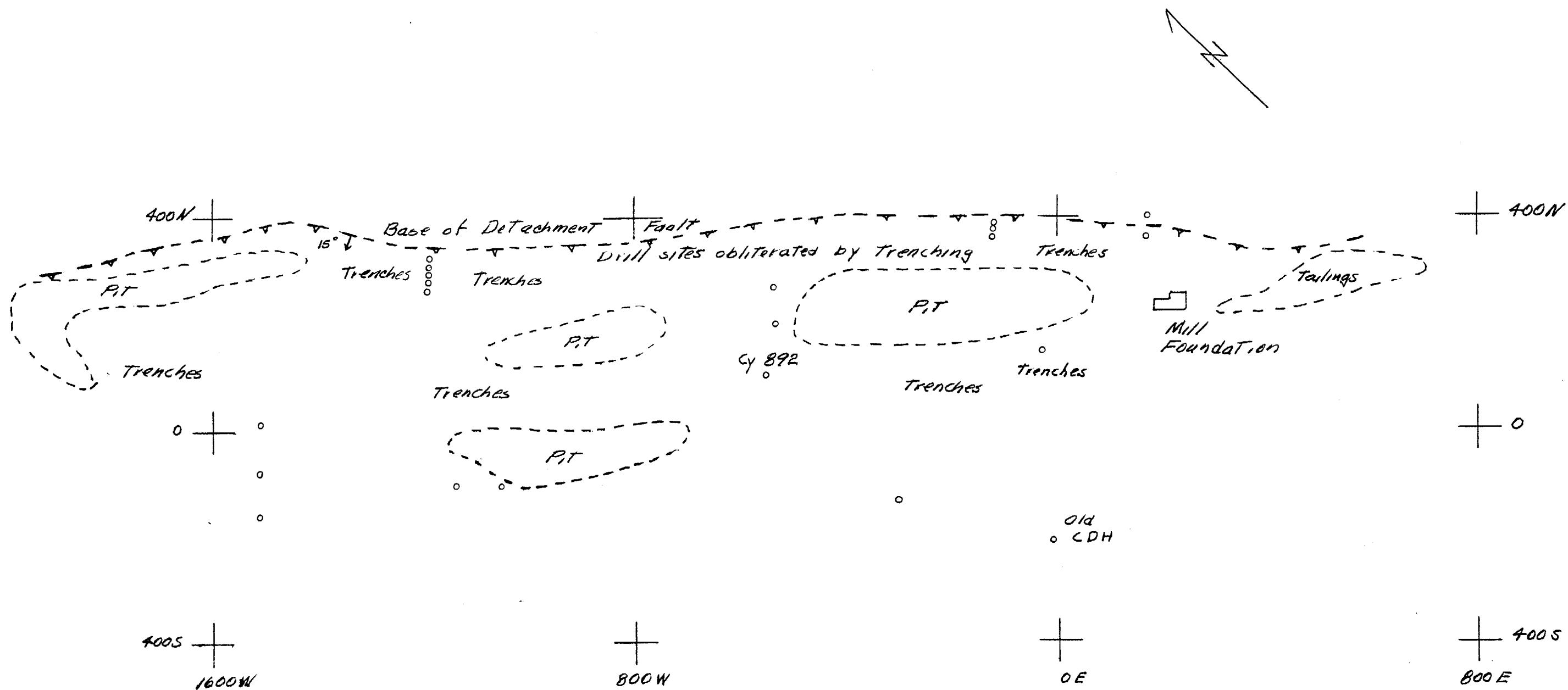
P-7
GBRC 91-19
0?
P-6
T-29
P-5
T-11
P-2
P-4
GBRC 91-18
0?
55' @ .477 oz Au/T

Toltec Mineralized Zone No. 2
Gold Basin District, Mohave Co, AZ

RM Corn April, 1991

Scale 1 inch = 100 ft

- o Drill Hole
- o P Proposed Drill Hole
- o ? Drill Hole - location uncertain



Cyclopic Mine

Gold Basin District, Mohave County, AZ

Scale 1 inch = 200 feet

RM Corn April, 1991

Red Cloud Prospect
Toltec Mineralized Zone No. 1

le o.	Interval Feet	Length Feet	Gold Oz/T
-7	0 - 5	5	.05
	60 - 75	15	.11
	130 - 165	35	.026
RC-90-01	55.0 - 115.0	60.0	.039
RC-90-02	35.0 - 70.0	35.0	.039
RC-90-03	95.0 - 165.0	70.0	.027
cluding	110.0 - 135.0	25.0	.052
C-90-04	0.0 - 150.0	150.0	.032
cluding	35.0 - 55.0	20.0	.054
RC-91-09	25.0 - 135.0	110.0	.020
cluding	35.0 - 55.0	20.0	.032
cluding	95.0 - 155.0	20.0	.035
RC-91-11	115.0 - 140.0	25.0	.020
RC-91-12	165.0 - 185.0	20.0	.028
	205.0 - 230.0	25.0	.020

Toltec Mineralized Zone No. 1

USB
GB-6

USB GB-7
o?

Road Cut
120' @ .03 oz Au/t

P23

Z-1 13

limonitic
zone

P22

Z-1 14

limonitic
zone

P21

Z-1 15

90-3

P20

90-2

P19

Z-1 F13

90-4

(150' @ .03 oz Au/t)

Z-1
F16

91-10

800 W

400 W

DE

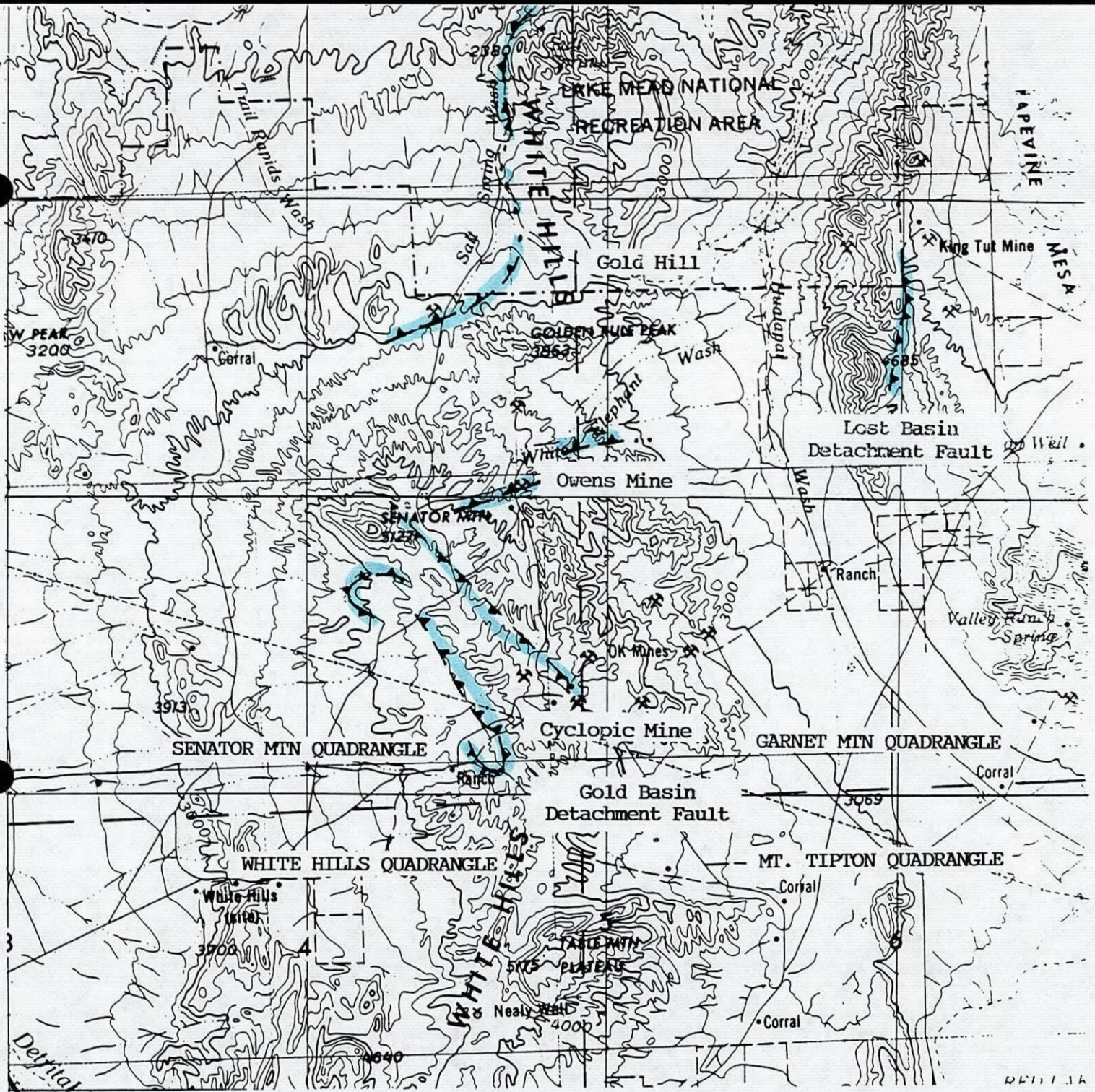
Scale
1 inch = 100 feet

- o Drill Hole
- Po Proposed Drill Hole
- o USB - US Borax Drill Hole


Red Cloud Prospect
Gold Basin District, Mohave County, AZ
RM Corn April, 1991

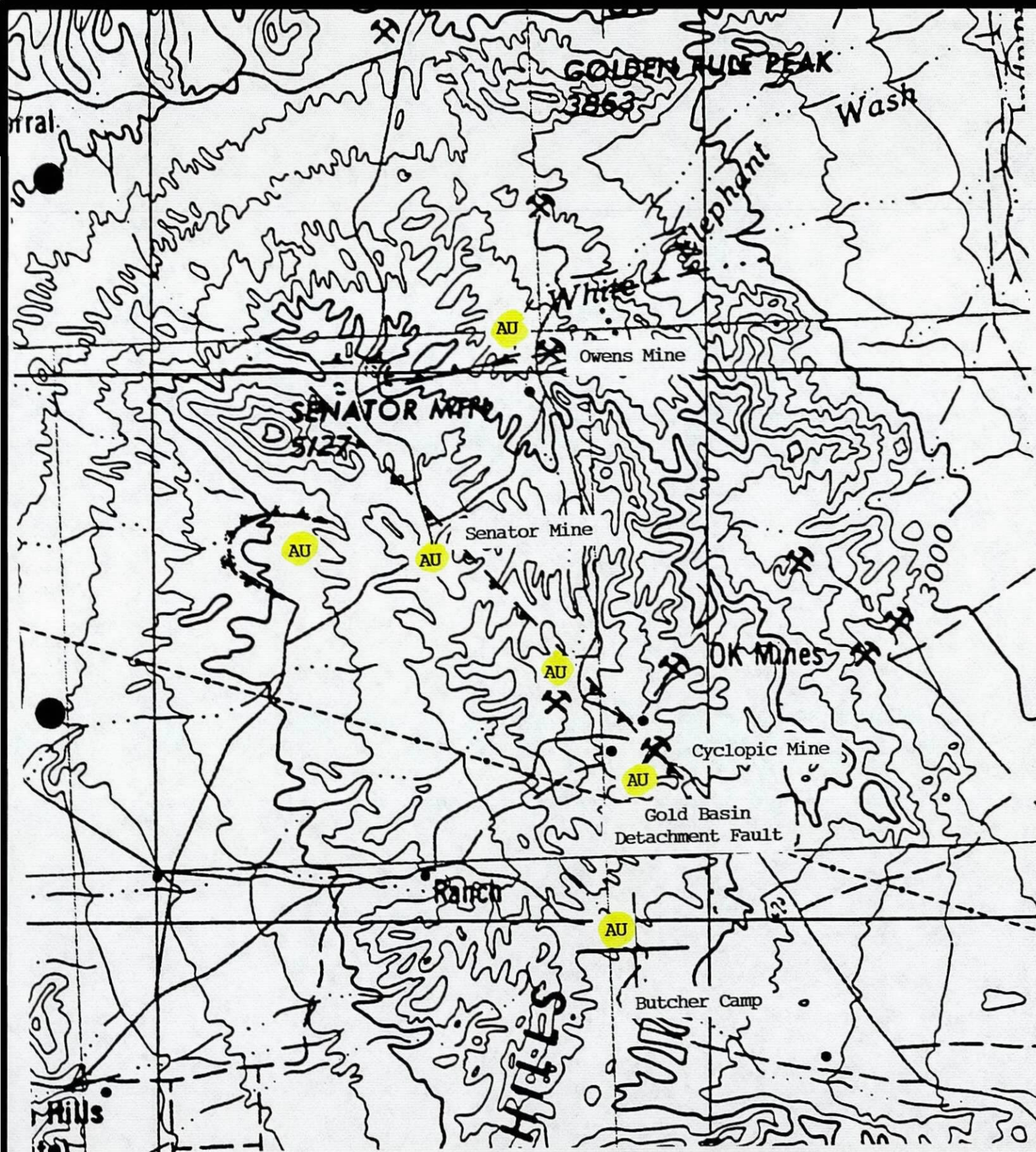
Mineral Potential
Detachment-Hosted Gold Mineralization
Gold Basin District, Mohave County, Arizona

Prospect/Property	Indicated Extent of Mineralization	Indicated/Inferred Tons	Au oz/T	Gold Resource	Possible Extent	Possible Tons	Grade oz Au/T	Possible Gold Resource - oz	Comments
Cyclopic Arden Larson	400' X 2,200' area of intense drilling & trench- ing. Mineralized wedge is 0-50' thick. Est. 50% of area drilled @ + .01 oz Au/T. Millar - drill indicated estimate Jenkins-Gold River Mtn States - Drill Proven	800,000 T 150,000 T	.04 .07	32,000		1,000,000 T	.03	30,000	Past Production - 30-50,000 T @ .20- .35 oz Au/T 30-50,000 T of Tailings @ .06 oz Au/T. Drilling along zone to NW is all in lower plate. Covered area to S has not been drilled.
Red Cloud (Toltec- Consol. Rhodes)	Zone No. 1 100 - 150' wide 1200' long 100' deep exposed & drilled Zone No. 2 20' wide at Higrade DH T-11 (55' @ .48 oz Au/T)	1,000,000 T	.03	30,000	Should continue to W beneath cover. Prospects indicate additional 1,000' length to E.	2,000,000 T	.03	60,000	Mineralized zone is pro- bably offset on N-S faults. All drilling is within 50-100' of exposed mineralization.
					20-50' width	200,000 T	.05-.10	15,000	Very little data. Zone includes DH T-11, 55' @ .477 oz Au/T & Fluorite Pit at approx. .10 oz Au/T. Extent of Foxhole min- eralization is not known.
Fry Arden Larson	5' wide 100' deep 800' long 1930 Rept - E.H. Crabtree Projection from UG workings	94,000T	.60 - 1.0	(?)	Mineralization Projects under cover Length - 1,000' +	50,000 T	.30 (?)	15,000	Toltec trench results 5' @ .97 oz Au/T 10' @ .67 oz Au/T 10' @ .15 oz Au/T
Owens	Trenched & drilled area 200' X 1,000' Est - 100' deep Wedge shaped zone. Higher-grade values are beneath low-angle, post-mineral fault.	385,000 T	.026	10,000				10,000	Drilling was inhibited by cover & land situ- ation. Mineralization & anom. Au continues for 5,000' to W & is known beneath cover for 1000- 1500 ft. to No. Drilling is primarily in lower part of detachment zone adjacent to exposed mineralization.



INDEX MAP OF THE GOLD BASIN - LOST BASIN
MINING DISTRICTS, MOHAVE COUNTY, ARIZONA

 Detachment Fault Zone

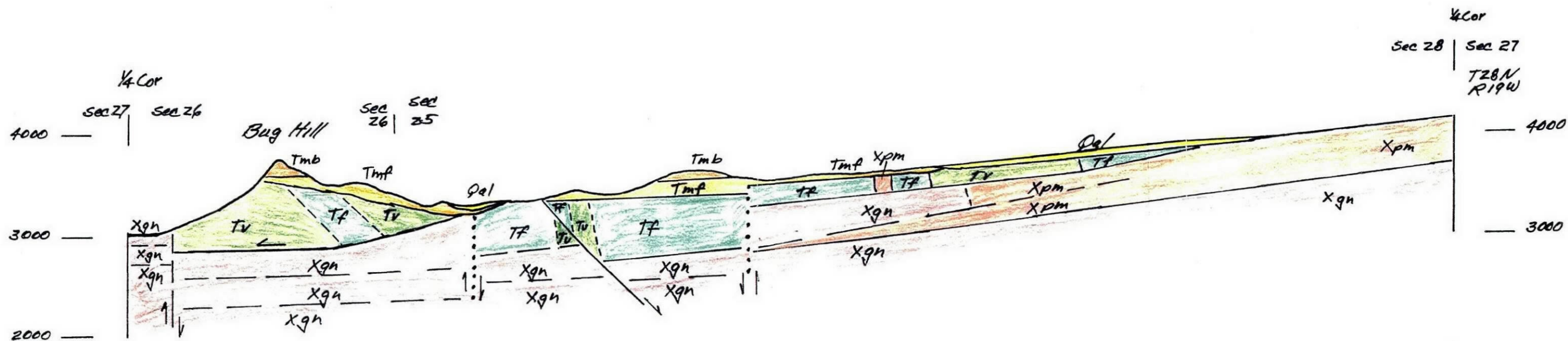
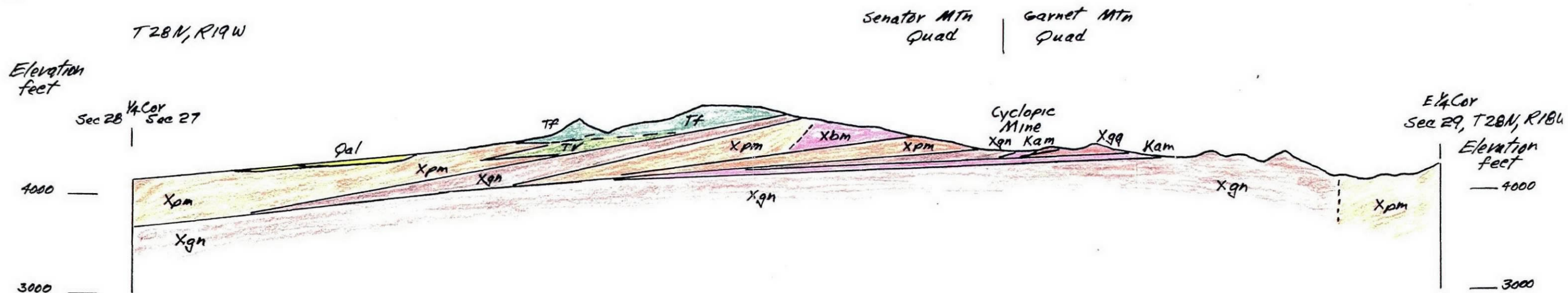


SKETCH MAP ILLUSTRATING THE ASSOCIATION OF GOLD MINERALIZATION
WITH THE GOLD BASIN DETACHMENT FAULT

Gold Basin District, Mohave County, Arizona

W

E



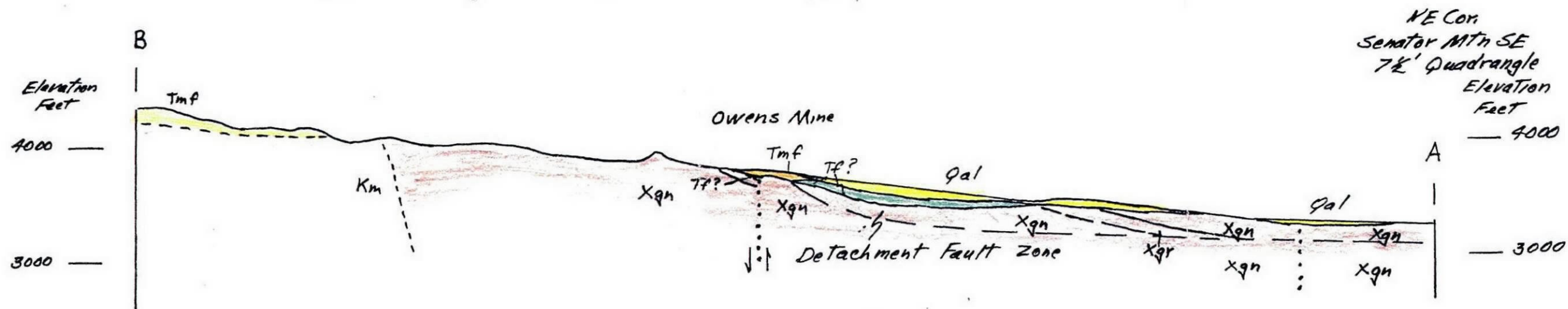
East - West Section From the Cyclopic Mine To the Bug Hills

Gold Basin District, Mohave County, Arizona

RM Corn May 1991

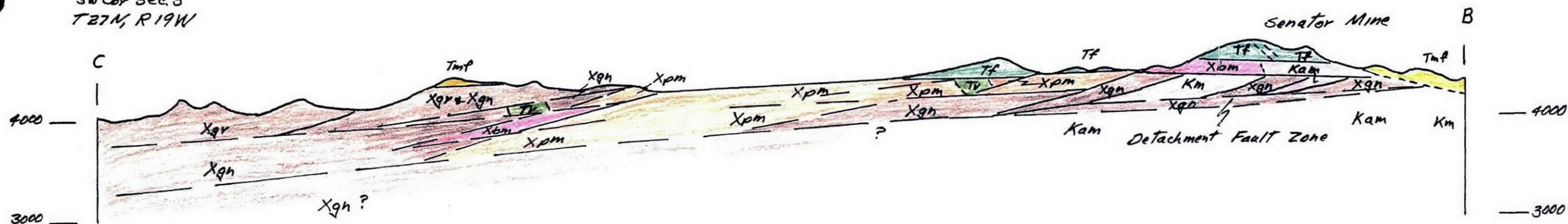
Scale 1 inch = 1000 feet - Vertical
1 inch = 2000 feet - Horizontal

Northeast-Southwest Section Illustrating the Gold Basin Detachment Fault
In the Vicinity of the Owens and Senator Mines
Gold Basin Mining District, Mohave County, Arizona



Looking Northwest

SW Cor Sec. 3
T27N, R19W



Scale 1 inch = 1000 ft - Vertical
1 inch = 2000 ft - Horizontal

RM Corrh May, 1991

4/9/ JDS

RUSSELL M. CORN

Registered Geologist

8425 DESERT STEPPES DR.

TUCSON, ARIZONA 85710

PHONE 602 - 298-1770

(4)

James D. Sell
Manager, Southwestern Exploration
ASARCO, Inc.
P.O. Box 5747
Tucson, AZ 85703

April 19, 1991

Re: Geologic Evaluation and Sampling Results
American Heavy Minerals Property
Lost Basin District
Mohave Co., Arizona

Summary

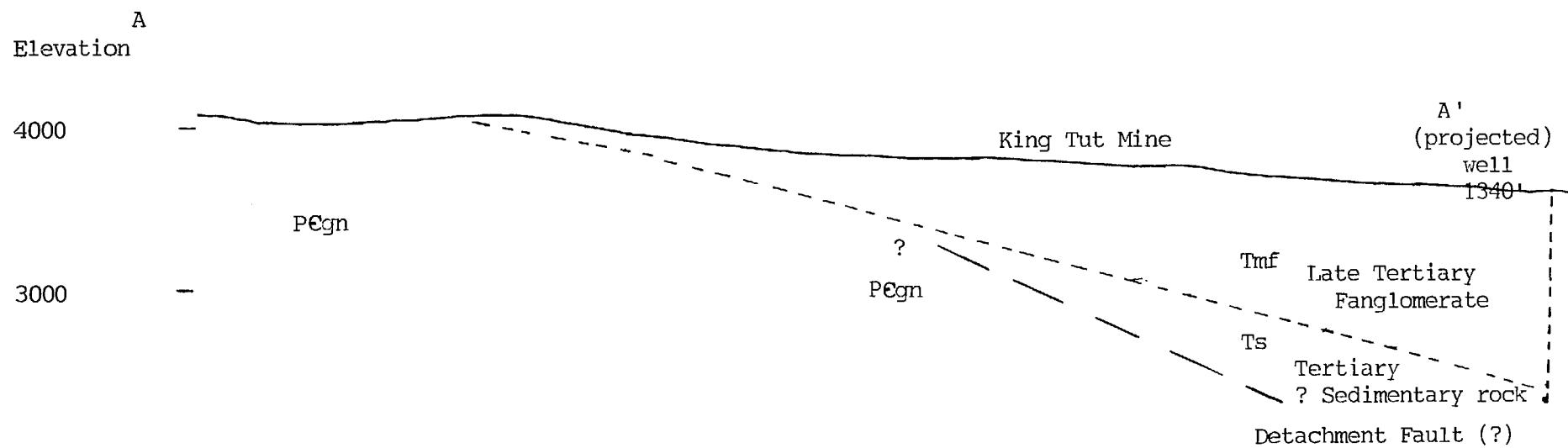
Geologic evaluation and sample results indicate that American Heavy Mineral's Lost Basin property has little exploration potential for concealed, near-surface, bulk-tonnage gold mineralization and rejection of the property submittal is recommended. There were no anomalous gold or associated trace element values in samples taken from the detachment fault zone or from exposures of pre-mineral rocks near the base of the post-mineral fanglomerate. Exposures at the edge of cover were not appreciably altered or mineralized and there were no geologic indications of adjacent mineralization concealed by post-ore cover. Samples taken to check the validity of old drill hole assays did not contain anomalous gold and results indicate that all of the older drill hole values reported by American Heavy Minerals are incorrect.

General

The American Heavy Minerals (Apache Oro) Lost Basin property, Mohave County, Arizona exhibits sheared and altered Precambrian metamorphic rocks along the projected northern extension of the Lost Basin Detachment Fault, and contains a number of narrow, gold-bearing, quartz-siderite veins and extensive, but thin, surficial placer gold deposits. A detailed review of previous geologic and drilling data indicated that the known vein and placer deposits were not of interest but that there was a possibility of bulk-tonnage gold mineralization concealed beneath the post-mineral fanglomerate or hosted by the Lost Basin Detachment Fault.

There is little definitive data on the thickness of the post-mineral fanglomerate. The accompanying generalized E - W section through the King Tut Placer Mine reflects the minimum thickness of the fanglomerate and suggests that a zone only several thousand feet from the edge of the fanglomerate would be within reasonable drilling depths. North of the King Tut the base of the fanglomerate slopes at 25° or more to the east and the area of thin post-mineral cover is limited.

The sampling described in this report was directed toward outcrops of the Lost Basin Detachment Fault and exposures adjacent to the base of the post-mineral fanglomerate, larger zones of exposed alteration and mineralization, and specific areas where appreciable gold values were previously reported in older drill holes. The samples consisted of 5 to 10 lb surface chip samples taken over 5 to 20 foot intervals, from exposures or areas of thin cover where surface debris could be shoveled



Scale 1" = 1,000

Generalized East - West Section
through the King Tut Mine
Lost Basin District, Mohave Co., Arizona

away. Near the post-mineral fanglomerate contact, the metamorphic rocks were commonly sheared, extensively weathered and poorly exposed. Consequently, the sampling is somewhat biased toward more resistant rocks although there were specific attempts to obtain select samples of the less resistant, sheared and altered material. Sample locations are shown on the attached index maps and results are tabulated on the attached sample logs.

Santa Fe Data

Geochemical data from Santa Fe Mining's 1986 exploration program was not received until after the sampling had been completed in the area. Their data shows widespread, weakly anomalous gold values (.03 - .10 ppm Au) in areas of exposed metamorphic rocks. Sample descriptions were not included and a direct comparison with older data can not be made. Santa Fe's sampling emphasized exposed shear zones and metamorphic rocks in the southern part of the property. Their results indicated that there is little chance of exposed bulk-tonnage gold mineralization in this area, but it did not provide information pertaining to the likelihood of concealed mineralization.

Geologic Observations

The Lost Basin Range consists of a north-south trending block of Precambrian metamorphic rocks flanked on the east by major north-south trending high-angle shear zones, the Lost Basin Detachment Fault, and a Late Tertiary, basin-fill fanglomerate. Known gold mineralization includes a number of narrow, north-south trending, quartz-siderite veins and relatively thin surficial placer deposits. The placers are in Quaternary alluvium overlying the fanglomerate and are most extensive in a zone $\frac{1}{2}$ mile to $1\frac{1}{2}$ miles east of its contact with Precambrian metamorphic rocks. Following are geologic observations noted during the sampling program that pertain to mineralization in general and the possibility of concealed mineralization.

1. There was no recognizable increase in the intensity of alteration and mineralization adjacent to post-mineral cover. Although rocks were more intensely sheared adjacent to the fanglomerate cover west of the King Tut Placer Mine, there was no direct evidence indicating that the detachment fault was present beneath the post-mineral cover in this area.
2. Higher-grade gold values are localized in sheared and brecciated quartz or quartz-siderite veins and are associated with siderite, minor amounts of pyrite, and late chalcedonic or druzy quartz in larger zones of low-sulfide, chlorite-siderite alteration. The brecciated quartz veins that have been mined are similar in appearance to the quartz breccia at the Cyclopic Mine at Gold Basin.
3. The general area with more prospects, exposed quartz-siderite veins and most intense alteration is the zone on the east side of the range along the projected trend of the Lost Basin Detachment Fault and west of the Lone Jack and King Tut placer mines.
4. The recently discovered "Detector Vein" in the NW $\frac{1}{4}$, SW $\frac{1}{4}$, Section 9, T29N, R17W exhibits gold in seams up to $\frac{1}{4}$ inch thick cutting sideritized rock and is associated with only minor amounts of light gray quartz. This gold closely resembles the coarse angular gold nuggets with associated carbonate and light gray quartz found in the placer deposit and suggests

that the placers were derived from similar mineralization eroded from deposits at higher elevations.

5. The surficial Quaternary alluvium in the area of better placer gold values contains a substantial amount of quartz, quartz-limonite and limonite-stained sheared granite or pegmatite cobbles and boulders in contrast to their virtual absence in the underlying fanglomerate.
6. Exposures at Red Basin, southwest of the Climax Mine, indicate that the Late Tertiary fanglomerate was deposited as basin-fill on a steep, east-dipping paleosurface that was probably tilted further to the east during uplift of the range, suggesting that the area of shallow, post-mineral fanglomerate cover is severely limited. The extensive oxidation and hematitic coloration of sheared metamorphic rocks at Red Basin resembles the hematitic oxidation at Gold Basin where the Tertiary erosion surface is superimposed on sheared and altered metamorphic rocks along the Detachment Fault.

Sample Results

The sample results are tabulated on attached sample logs and locations are shown on index maps of the area. The higher-grade gold values listed on the sample logs are select samples from veins or other mineralized material and the higher trace element values are from altered wall rock in or near the vein mineralization. The results indicate:

1. The poorly-exposed, intensely sheared rocks in and near the Detachment Fault zone in Sections 16, 21, 28 and 33, T29N, R17W, in the southern part of the property do not exhibit any anomalous gold and trace element values and there is no indication of concealed mineralization in the Detachment Fault.
2. There are no anomalous gold or associated trace element values in sheared and altered metamorphic rocks near the base of the post-ore fanglomerate in Sections 9 and 16, T29N, R17W and no indication of the possible presence of the Detachment Fault or adjacent mineralization concealed by shallow, post-ore cover.
3. The .02 to .08 oz Au/T values reported for old drill holes in the West $\frac{1}{2}$ of Sec 9 and at Red Basin in the NW $\frac{1}{4}$ of Sec 4, T29N, R17W are imaginary assays and none of the old Apache Oro and RIP assays are reliable.

Recommendations

Geologic observations and geochemical sampling at Lost Basin failed to find any reflection or indications of concealed gold mineralization of interest. The data indicate that American Heavy Minerals Lost Basin property has little exploration potential for near-surface bulk-tonnage gold mineralization. Rejection of the Lost Basin submittal is recommended.

Respectfully submitted,



Russell M. Corn

PROSPECT Lost Basin
 COL Mohave STATE AZ

SAMPLE LOG

PAGE 1 OF 8

SAMPLE NUMBER	LOCATION		DESCRIPTION	RADIOACTIVE ELEMENTS			PATHFINDER ELEMENTS							BASE METALS				SULFO- SALTS		PRECIOUS METALS		
	LEGAL	GEOGRAPHIC		LITHOLOGY AND MINERALIZATION	U ₃ O ₈	eU	eTh			W 3	AcidSol Ba 2	Total Ba % 2	F 2	Hg 2	Cu 3	Mo 3	Pb 3	Zn 3	As 3	Sb 3	Au 3	Ag 3
1A	NW/NW section 28 29N, 17W	Doser Cut saddle east of Pai Mts	strongly hematitic gneiss											.03					2.0	<.1	.016	.05
1B	"	"	sheared chloritic gneiss											<.01					5.5	.2	.002	.15
1C	"	"	felsic rock with red hem. and limonite after pyrite											<.01					14.0	<.1	.004	.25
1D	"	"	sheared chloritic gneiss											.01					3.0	<.1	.002	.30
1E	"	Doser Cut 75' east of samples 1A → 1D	20' zone of sheared granite with siderite											.02					4.8	<.1	.002	<.05
2A	"	east bank of N-S running wash	3' channel sample of non foliated hematitic granite											.01					4.6	.6	.002	<.05
2B	SW/SW section 21 29N, 17W	E-W running wash just south of Paisaddle	sheared granite and gneiss											.03					1.4	<.1	.002	.05
2C	"	"	"											.02					.8	<.1	.002	.05
2D	"	"	"											.01					.6	<.1	.002	<.05
3A	"	exposed granite on ridge	within 100' vertical of tertiary sediments sheared hematitic granite											.03					.6	<.1	.002	<.05
3B	"	"	"											.02					5.0	.6	.002	.05
4A	NW/SW section 21 29N, 17W	E-W running wash just north of Paisaddle	slightly fractured hematitic granite, fairly fresh											.01					1.2	<.1	.002	<.05

1 VALUES IN PPM EXCEPT "TOTAL BARIUM" WHICH IS IN %.
 2
 3

CORN & AHERN
 CONSULTING GEOLOGISTS
 TUCSON, ARIZONA

SAMPLE NUMBER	LOCATION		DESCRIPTION	RADIOACTIVE ELEMENTS			PATHFINDER ELEMENTS							BASE METALS				SULFO-SALTS		PRECIOUS METALS	
	LEGAL	GEOGRAPHIC	LITHOLOGY AND MINERALIZATION	U ₃ O ₈	eU	eTh			W	AcidSol Ba	Total Ba %	F	Hg	Cu	Mo	Pb	Zn	As	Sb	Au	Ag
4B	NW/SW section 21 29N, 17W	E-W wash just north of Pen saddle	slightly alt. gneiss, 5' vertical below conglomerate cut crop										.01					.6	<.1	.009	.05
5	NE/SE section 20 29N, 17W	Dozer cut	alt. gneiss -- outcrop/alluvium?										<.01					130	<.1	.002	.35
5A	" "	prospect	thin highly sheared zones with chlorite and siderite -- metadiorite in close proximity → sample composed of 10' channel around pit										<.01					.6	<.1	.020	.05
6	NW/SW section 21 29N, 17W	in wash	5' channel sample of highly sheared chloritic & hematitic granite										<.01					4.8	<.1	.002	.10
6A	SW/NW section 21 29N, 17W	in wash	fresh unfractured gneissic granite															.6	<.1	.002	<.05
7	SW/NW section 21 29N, 17W	in wash	10' channel sample of highly sheared granite - horn/siderite/siliceous (probably the detachment)										.01					6.5	.2	.002	<.05
7A	" "	in wash	" " " " " "										.02					5.5	.8	.002	<.05
8	SE/SE section 17 29N, 17W	prospect pit	3' thick Qtz vein select sample of Qtz/siderite/minor sulfides										1.00					4.2	.2	.000	13.0
9	NW/NW section 21 29N, 17W	round cut	sheared zone of gneiss? horn/siderite/silica										.02					130	.6	.004	.10
10	" "	" "	fresh gneiss with limonite along fractures										.01					4.0	<.1	.002	.10
11	" "	" "	sheared gneiss										.02					3.8	<.1	.002	.10
12	SW/SW section 16 29N, 17W	in wash	possibly N-S normal fault, mainly clay/gneiss → red horn/limonite										.02					8.5	<.1	.004	.10

1 VALUES IN PPM EXCEPT "TOTAL BARIUM" WHICH IS IN %.

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SAMPLE NUMBER	LOCATION		DESCRIPTION	RADIOACTIVE ELEMENTS			PATHFINDER ELEMENTS						BASE METALS				SULFO-SALTS		PRECIOUS METALS		
	LEGAL	GEOGRAPHIC	LITHOLOGY AND MINERALIZATION	U ₃₀₈	eU	eTh			W ₃	AcidSol ₂ Ba	Total Ba % ₂	F ₂	Hg ₂	Cu ₃	Mo ₃	Pb ₃	Zn ₃	As ₃	Sb ₃	Au ₃	Ag ₃
13	NE/NW section 21 T29N, R17W	along canal	sheared gneiss										.02					8.7	.10	5002	.10
14	NE/SW section 16 T29N, R17W	in drainage	sheared amphibolite gneiss / hematite stained										.03					.4	<.1	5002	.10
15A	"	"	pegmatitic chewed up gtz feldspar, high angle N-S, highly sheared, 20' channel										.02					.6	<.1	5020	.10
15B	"	"	siderite zone										.02					1.2	.1	5002	.10
15C	"	"	prospect pit										.04					<.2	<.1	5014	.05
15D	"	"	in drainage										.03					1.4	<.1	5110	.10
16A	"	"	sheared silic. gneiss										.02					2.2	<.1	5002	.10
16B	"	"	validation pit										.01					.2	<.1	5006	.05
17A	NE/NW section 16 T29N, R17W	"	5' channel, Gneiss with highly chloritic biotite / red hem / Tr siderite / hematite										.02					2.8	.1	5002	.15
17B	"	"	10' → biotite / chlorite 10' → hematitic granite grab sample, mainly chloritic material with some pegmatitic material										.01					1.8	<.1	5002	.05
17C	SE/NW section 16 T29N, R17W	"	silic / hem gneiss - sample taken from dirt pile next to pit										.02					1.8	<.1	5002	.05
17D	"	"	50' channel, moderately alt gneiss chloritic / hematitic with feldspathic zones										.03					1.8	<.1	5002	<.05

1 VALUES IN PPM EXCEPT "TOTAL BARIUM" WHICH IS IN %

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SAMPLE NUMBER	LOCATION		DESCRIPTION	RADIOACTIVE ELEMENTS			PATHFINDER ELEMENTS							BASE METALS				SULFO- SALTS		PRECIOUS METALS	
	LEGAL	GEOGRAPHIC	LITHOLOGY AND MINERALIZATION	U ₃ O ₈	eU	eTh			W	AcidSol Bo	Total Ba %	F	Hg	Cu	Mo	Pb	Zn	As	Sb	Au	Ag
17E	SE/NW section 16 29N, 17W	validation pit	same as 17D, but slightly less alt.										.04					1.2	.1	.085	.10
18A	NW/NW section 16 29N, 17W	back hoe trench	10' channel, strong hem/chlor sheared gneiss										.02					1.2	<.1	.050	.05
18B	"	"	road cut sheared gneiss										.03					1.4	.1	.002	.10
19A	SE/NE section 17 29N, 17W	prospect pit	quartzite? → 5' wide dike (E-W) felsic/shattered/tingit veins/pyrite										.04					.8	.2	.580	1.40
19B	"	"	rock adjacent to 19A → weakly hem/chlor gneiss										.03					.8	.3	.065	.25
20A	SW/NW section 16 29N, 17W	"The Carl vein"	4"-10" qtz/siderite vein										.02					2.6	<.1	.180	.90
20B	"	"	siderite/cankerite zone 1'-2' thick										.04					11.0	<.1	.042	.75
20C	"	"	chlorite zone 1'-2' thick										.02					2.6	.1	.006	.25
20D	"	"	select sample - 1"-2" thick subhorizontal - siderite/ptz/limonite/pyrite										.02					8.5	.2	.110	.55
20E	"	"	20' channel of chloritic gneiss Tr siderite/minor limonite after pyrite										.30					520	.7	.006	1.3
21A	NE/NW section 16 29N, 17W	Dozer cut	10' channel, gneiss with hematite /siderite/chlorite										.02					2.8	.3	.010	.20
21B	"	"	Dozer cut 30 up hill from 21A Same as 21A										.01					.8	<.1	.002	.05

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SAMPLE NUMBER	LOCATION		DESCRIPTION	RADIOACTIVE ELEMENTS			PATHFINDER ELEMENTS							BASE METALS					SULFO- SALTS		PRECIOUS METALS	
	LEGAL	GEOGRAPHIC	LITHOLOGY AND MINERALIZATION	U ₃ O ₈	eU	eTh			W ₃	AcidSol ₂ Ba	Total Ba % ₂	F ₂	Hg ₂	Cu ₃	Mo ₃	Pb ₃	Zn ₃	As ₃	Sb ₃	Au ₃	Ag ₃	
21C	NE/NW section 16 29N, 17W	small rock nob	white gtz											.03				6.0	<.1	4002	.15	
21D	"	"	20' channel down same road → slightly alt gneiss { felsic bands fresh mafic bands alt- gauge & breccia → select sample											.01				.8	<.1	.002	.15	
22	NE/NE section 17 29N, 17W	Vanadinite												.02				10.0	.7	1.000	.85	
23A	sw/sw section 9 29N, 17W		10' channel → strongly alt-gneiss hi red hem and limonite content											<.01				3.0	.1	.004	.10	
23B	"	"	"											.02				1.8	.1	.010	.10	
23C	"	"	"											<.01				.4	<.1	.002	.05	
23D	"	"	siderite alteration, poor exposure											.02				1.4	.2	.004	.25	
24	"	"	Dozer cut 50' channel, slight/mud alt gneiss chlorite and red hem.											.02				.6	.2	.004	.10	
25A	NE/sw section 9 29N, 17W		original rock? → highly fractured /hi siderite content / red hem / limonite											<.01				1.0	.3	.002	.10	
25B	"	"	bx alt gneiss											<.01				3.2	.4	4002	.10	
26	NW/sw section 9 29N, 17W		fresh gneiss → 1/2 felsic (gtz/feld) 1/2 mafic (mainly biotite)											<.01				.2	.3	4002	<.05	
27	"	"	Dozer cut 30' channel, fresh to slightly alt. gneiss, mainly mafic											.01				1.6	.1	.002	<.05	

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SAMPLE NUMBER	LOCATION		DESCRIPTION	RADIOACTIVE ELEMENTS			PATHFINDER ELEMENTS							BASE METALS				SULFO-SALTS		PRECIOUS METALS	
	LEGAL	GEOGRAPHIC	LITHOLOGY AND MINERALIZATION	U ₃ O ₈	eU	eTh			W	Acid Sol Ba	Total Ba %	F	Hg	Cu	Mo	Pb	Zn	As	Sb	Au	Ag
28	sw/sw section 9 29N, 17W	validation pit	1" thick gtz vein										.02					.30	.2	.014	.95
29A	" "	" "	10' channel slightly alt gneiss chlorite / red hematite staining fractures										.03					.8	.2	.002	.15
29B	" "	" "	loess like fanglomerate to east										.01					.10	.2	.002	.05
30A	" "	"detector prospect"	silicite/silica zone, some druse gtz and open space filling / Mn / Red hematite										.02					.95	.1	.040	.65
30B	" "	" "	alt gneissic wall rock / chlorite / Mn										.01					.19	.3	.170	.40
30C	" "	" "	Basic wall rock, meta-diorite with some silicification / chlorite / Tr pholite										.01					.28	.4	.006	.35
31	sw/nw section 9 29N, 17W	validation pit	slightly alt. gneiss / mafic → chlorite										.01					.12	.3	.002	.05
32A	sw/sw section 9 29N, 17W	" "	6' channel → gneiss composed mainly of biotite alt to chlorite & red hematite										.02					.22	.2	.006	.15
32B	" "	" "	10' channel → same lithology as 32A → note abundant clayey red hematite in soil										.02					.14	.2	.002	.05
33A	" "	Dozer cut	5' channel → meta-diorite ± 30% amphibole										.02					.28	.1	.002	.10
33B	" "	" "	5' channel → sheared meta-diorite some gtz veins 1" thick / hematite										.03					.18	.1	.008	.50
34A	sw/nw section 9 29N, 17W		sheared meta-diorite, grab sample										.02					.16	.1	.010	.10

1 VALUES IN PPM EXCEPT "TOTAL BARIUM" WHICH IS IN %.

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PROSPECT Conte 1 Lost BasinCOUNTY Mohave STATE AZPAGE 2 OF 2

SAMPLE NUMBER	LOCATION		DESCRIPTION	RADIOACTIVE ELEMENTS			PATHFINDER ELEMENTS							BASE METALS				SULFO- SALTS		PRECIOUS METALS	
	LEGAL	GEOGRAPHIC	LITHOLOGY AND MINERALIZATION	U ₃ O ₈	eU	eTh			W	Acid Sol Ba	Total Ba %	F	Hg	Cu	Mo	Pb	Zn	As	Sb	Au	Ag
34B	SW/NW section 9 29N, 17W		6" thick gtz vein N-S, sulfide pseudomorphs, hi limonite/red hem										.04					750	.1	.050	.80
34C		Dozer cut											.03					12	.3	4002	4.05
35A	NE/NW section 9 29N, 17W	in wash	caliche cemented conglomerate?? → clast consist of gneiss with sulfide pseudomorphs, calcium cement strongly hematitic										.02					6.5	.1	.014	.20
36A	NW/NW section 9 29N, 17W	Dozer cut	2' wide shear zone - km/bx/fault gouge - 2" silica voids - N-S 80W										.02					6.5	.2	.002	.10
36B	" "	" "	45' channel - shattered metadiorite chloritic/some sulfide cast/moderately silicified										.02					2.8	.1	.002	.10
37A	SE/SW section 4 29N, 17W		random chip, questionable if in place?? folded gneiss unit, Tr of limonite/px phoscho										.01					12	.1	.022	.10
37B	" "	prospect pit	fresh metadiorite/no alt.										<.01					.4	.1	4002	.05
38A	NE/SW section 4 29N, 17W	outcrop	metadiorite → some chlor/hem staining/some siderite concretions										<.01					12	.1	.050	.10
39A	NE/NW section 4 29N, 17W	road cut	felsic unit/high limonite/red hem slightly silic. / Tr phlogopite										.03					2.0	.1	.040	.10
39B	" "	" "	" "										.02					.8	.1	.002	.10
39C	" "	" "	highly sheared gneiss-metadiorite hematitic clays										.04					9.6	.5	4002	.20
40A	SW/SE section 33 30N, 17W	in drainage	sifted sample of younger flat lying Tertiary conglomerate										.02					6.0	.1	.008	.05

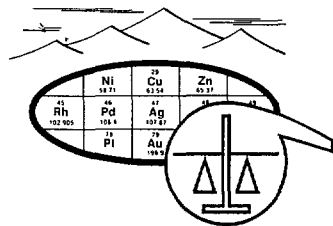
1 VALUES IN PPM EXCEPT "TOTAL BARIUM" WHICH IS IN %.

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SAMPLE NUMBER	LOCATION		DESCRIPTION	RADIOACTIVE ELEMENTS			PATHFINDER ELEMENTS							BASE METALS				SULFO-SALTS		PRECIOUS METALS	
	LEGAL	GEOGRAPHIC	LITHOLOGY AND MINERALIZATION	U ₃₀₈	eU	eTh			W ₃	Acid Sol ₂ Ba	Total Ba % ₂	F ₂	Hg ₃	Cu ₃	Mo ₃	Pb ₃	Zn ₃	As ₃	Sb ₃	Au ₃	Ag ₃
40B	SW/SE section 33 30N, 17W	in drainage	sheared gneiss / red hem → immediately below fanglomerate										.14					1.4	.40	.020	.10
41A	NW/SE section 33 30N, 17W	climax mine dump	brecciated gtz cemented with gtz. & ^{on chert} sulfides										.04					1.8	.1	1.100	.40
41B	" "	climax fault	N-S fault, 90° → bx gtz → not cemented, in gorge / limonite / hem										.03					4.4	.3	.060	.10
41C	" "	prospect pit	4' wide zone of blocky siliceous alt. granite / siderite / possibly a dike										.02					2.0	<.1	4.002	<.05
41D	" "	climax mine	tan colored wall rock - PH cuts on road 3 of shaft										.02					1.2	<.1	.034	.15
42	SW/NW section 28 29N, 17W	in drainage	random chip, light green highly sheared granite / pegmatite (sl. alt.)										.01					<.2	<.1	4.002	<.05
43A	SE/NE section 29 29N, 17W	shear zone in drainage	random chip / gorge zone / highly sheared metabasite / chl / red hem										.02					1.4	<.1	4.002	<.05
43B	" "	on ridge	alt gneiss with chlorite / red hem and sulfide pseudomorphs										.01					.4	<.1	.004	<.05
43C	" "	shear zone in drainage	N-S shear zone same as 43A										.01					.2	<.1	4.002	<.05
44A	NE/NW section 33 29N, 17W	up major drainage	random chip - highly sheared & bx / hi siderite / limonite → alt. sheared gneiss										.02					2.0	.2	4.002	.10
44B	" "	" "	up closer to older tilted Tertiary fanglomerate - highly bx → possibly detachment zone										.01					1.8	<.1	4.002	.25

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Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 722
April 11, 1991
LB-1-A TO LB-44-B
PAGE 1 OF 4

ASARCO INCORPORATED

APR 15 1991

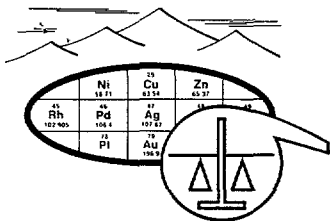
ASARCO INCORPORATED
Attn: Mr. Russell Corn
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

SW EXPLORATION

Z samples are standards

Analysis of 100 Rock Chip Samples

		FIRE ASSAY				
ITEM	SAMPLE NUMBER	Au* (ppm)	Ag (ppm)	As (ppm)	Sb (ppm)	Hg (ppm)
1	LB-1-A	.016	.05	2.0	<.1	.03
2	LB-1-B	.002	.15	5.5	.2	<.01
3	LB-1-C	.004	.25	14.0	<.1	<.01
4	LB-1-D	.002	.30	3.0	<.1	.01
5	LB-1-E	<.002	<.05	4.8	<.1	.02
6	LB-1-Z	.250	6.10	55.0	8.5	.56
7	LB-2-A	<.002	<.05	4.6	.6	.01
8	LB-2-B	<.002	.05	1.4	<.1	.03
9	LB-2-C	<.002	.05	.8	<.1	.02
10	LB-2-D	<.002	<.05	.6	<.1	.01
11	LB-3-A	<.002	<.05	.6	<.1	.03
12	LB-3-B	<.002	.05	5.0	.6	.02
13	LB-4	<.002	<.05	1.2	<.1	.01
14	LB-4-B	.008	.05	.6	<.1	.01
15	LB-5	.002	.35	13.0	<.1	<.01
16	LB-5-A	.020	.05	.6	<.1	<.01
17	LB-6	<.002	.10	4.8	<.1	<.01
18	LB-6-A	<.002	<.05	.6	<.1	.02
19	LB-7	<.002	<.05	6.5	.2	.01
20	LB-7-A	<.002	<.05	5.5	.8	.02
21	LB-8	4.300	13.00	4.2	.2	1.00
22	LB-9	.004	.10	18.0	1.6	.02
23	LB-10	.002	.10	4.0	<.1	.01
24	LB-10-Z	.240	5.70	55.0	8.0	.56
25	LB-11	.002	.15	3.8	<.1	.02



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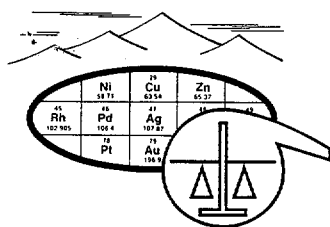
JOB NO. TAJ 722

April 11, 1991

PAGE 2 OF 4

FIRE ASSAY

ITEM	SAMPLE NUMBER	Au* (ppm)	Ag (ppm)	As (ppm)	Sb (ppm)	Hg (ppm)
26	LB-12	.004	.10	8.5	<.1	.02
27	LB-13	<.002	.10	8.0	.4	.02
28	LB-14	.002	.10	.4	<.1	.03
29	LB-15-A	.020	.10	.6	<.1	.02
30	LB-15-B	.002	.10	1.2	.1	.02
31	LB-15-C	.014	.05	<.2	<.1	.04
32	LB-15-D	.110	.10	1.4	<.1	.03
33	LB-16-A	.002	.10	2.2	<.1	.02
34	LB-16-B	.006	.05	.2	<.1	.01
35	LB-17-A	<.002	.15	2.8	.1	.02
36	LB-17-B	<.002	.05	1.8	<.1	.01
37	LB-17-C	<.002	.05	1.8	<.1	.02
38	LB-17-D	.002	<.05	1.8	<.1	.03
39	LB-17-E	.085	.10	1.2	.1	.04
40	LB-18-A	.050	.05	1.2	<.1	.02
41	LB-18-B	<.002	.10	1.4	.1	.03
42	LB-19-A	.580	1.40	.8	.2	.04
43	LB-19-B	.065	.25	.8	.3	.03
44	LB-20-A	.180	.90	2.6	<.1	.02
45	LB-20-B	.042	.45	11.0	<.1	.04
46	LB-20-C	.006	.25	2.6	.1	.02
47	LB-20-D	.110	.55	8.5	.2	.02
48	LB-20-Z	.240	5.70	50.0	9.0	.44
49	LB-20-E	.006	1.30	50.0	.7	.30
50	LB-21-A	.010	.20	2.8	.3	.02



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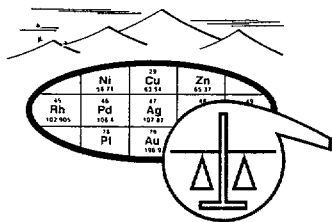
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April 11, 1991

PAGE 3 OF 4

FIRE ASSAY						
ITEM	SAMPLE NUMBER	Au* (ppm)	Ag (ppm)	As (ppm)	Sb (ppm)	Hg (ppm)
51	LB-21-B	.002	.05	.8	<.1	.01
52	LB-21-C	<.002	.15	6.0	<.1	.03
53	LB-21-D	.002	.15	.8	<.1	.01
54	LB-22	1.000	.85	10.0	.7	.02
55	LB-23-A	.004	.10	3.0	.1	<.01
56	LB-23-B	.010	.10	1.8	.1	.02
57	LB-23-C	.002	.05	.4	<.1	<.01
58	LB-23-D	.004	.25	1.4	.2	.02
59	LB-24	.004	.10	.6	.2	.02
60	LB-25-A	.002	.10	1.0	.3	<.01
61	LB-25-B	<.002	.10	3.2	.4	<.01
62	LB-26	<.002	<.05	.2	.3	<.01
63	LB-27	.002	<.05	1.6	.1	.01
64	LB-28	.014	.95	30.0	.2	.02
65	LB-29-A	<.002	.15	.8	.2	.03
66	LB-29-B	<.002	.05	1.0	.2	<.01
67	LB-30-A	.040	.65	9.5	<.1	.02
68	LB-30-B	.170	.40	19.0	.3	.01
69	LB-30-C	.006	.35	28.0	.4	.01
70	LB-30-Z	.250	5.60	55.0	10.0	.46
71	LB-31	<.002	.05	1.2	.3	.01
72	LB-32-A	.006	.15	2.2	.2	.02
73	LB-32-B	.002	.05	1.4	.2	.02
74	LB-33-A	<.002	.10	2.8	<.1	.02
75	LB-33-B	.008	.50	.8	.1	.03



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JOB NO. TAJ 722

April 11, 1991

PAGE 4 OF 4

FIRE ASSAY						
ITEM	SAMPLE NUMBER	Au* (ppm)	Ag (ppm)	As (ppm)	Sb (ppm)	Hg (ppm)
76	LB-34-A	.010	.10	1.6	.1	.02
77	LB-34-B	.050	.80	75.0	4.1	.04
78	LB-34-C	<.002	<.05	1.2	.3	.03
79	LB-35-A	.014	.20	6.5	.1	.02
80	LB-36-A	.002	.10	6.5	.2	.01
81	LB-36-B	.002	.10	2.8	<.1	.02
82	LB-37-A	.022	.10	1.2	<.1	.01
83	LB-37-B	<.002	.05	.4	<.1	<.01
84	LB-38-A	.050	.10	1.2	<.1	<.01
85	LB-39-A	.040	.10	2.0	<.1	.03
86	LB-39-B	.002	.10	.8	<.1	.02
87	LB-39-C	<.002	.20	4.6	.5	.04
88	LB-40-A	.008	.05	6.0	.1	.02
89	LB-40-B	.020	.10	1.4	.4	.14
90	LB-40-Z	.260	5.50	50.0	8.0	.44
91	LB-41-A	1.100	.40	1.8	.1	.04
92	LB-41-B	.060	.10	4.4	.3	.03
93	LB-41-C	<.002	<.05	2.0	<.1	.02
94	LB-41-D	.034	.15	1.2	<.1	.02
95	LB-42	<.002	<.05	<.2	<.1	.01
96	LB-43-A	<.002	<.05	1.4	<.1	.02
97	LB-43-B	.004	<.05	.4	<.1	.01
98	LB-43-C	<.002	<.05	.2	<.1	.01
99	LB-44-A	<.002	.10	2.0	.2	.02
100	LB-44-B	<.002	.25	1.8	<.1	.01

*NOTE: Method of analysis by combination fire assay and atomic absorption based on a two assay-ton sample.

cc: Mr. J. J. Malusa

T30N
R17W

Golden Gate Mine

King Tut
VABM 4194

3600

Climax Mine

3684

Sample Index
Map
Lost Basin
Mohave Co. AZ
March, 1991

41-C
41-B
41-A
41-D

40-B
40-A

39-A
39-B
39-C

X 38A

X 37-B

X 37-A

Water

35A

King Tut
Placer Mine

X 36
A, B

A-C
X 34

A-C
30
X

29
A, B

33
X

26
X

25
X

27
X

T29N
R17W

Golden Mile Mine

28

4262 X

4000

9

X 37-A

Water

Lone Jack
Placer Mine

3600

WABM 4685

29N
17W

Sample Index
Map

Lost Basin
Mohave Co. AZ

March, 1991

3600

3363

32

33

8
12
13
11
10
9

15
14
13
12
11
10
9
8
7
6
5
4
3
2
1

7-A
7
6-A

5
5A

6

4
X

4-B
X

2-B
3A-B
X
X

1-E
2-A
X
X

43-B
X

43-C
X
43-A

42
X

44
A, B
X

T29N
R17W

Golden Mile
Mine

Water

King Tut
Placer Mine

Sample Index
Map

Lost Basin
Mohave Co. AZ

March, 1991

Lone J.
Placer M

GEOLOGY AND EXPLORATION POTENTIAL

OF THE OWENS MINE AREA

GOLD BASIN MINING DISTRICT, MOHAVE COUNTY, ARIZONA

RUSSELL M. CORN

May, 1991

**GEOLOGY AND EXPLORATION POTENTIAL
OF THE OWENS MINE AREA
GOLD BASIN MINING DISTRICT, MOHAVE COUNTY, ARIZONA**

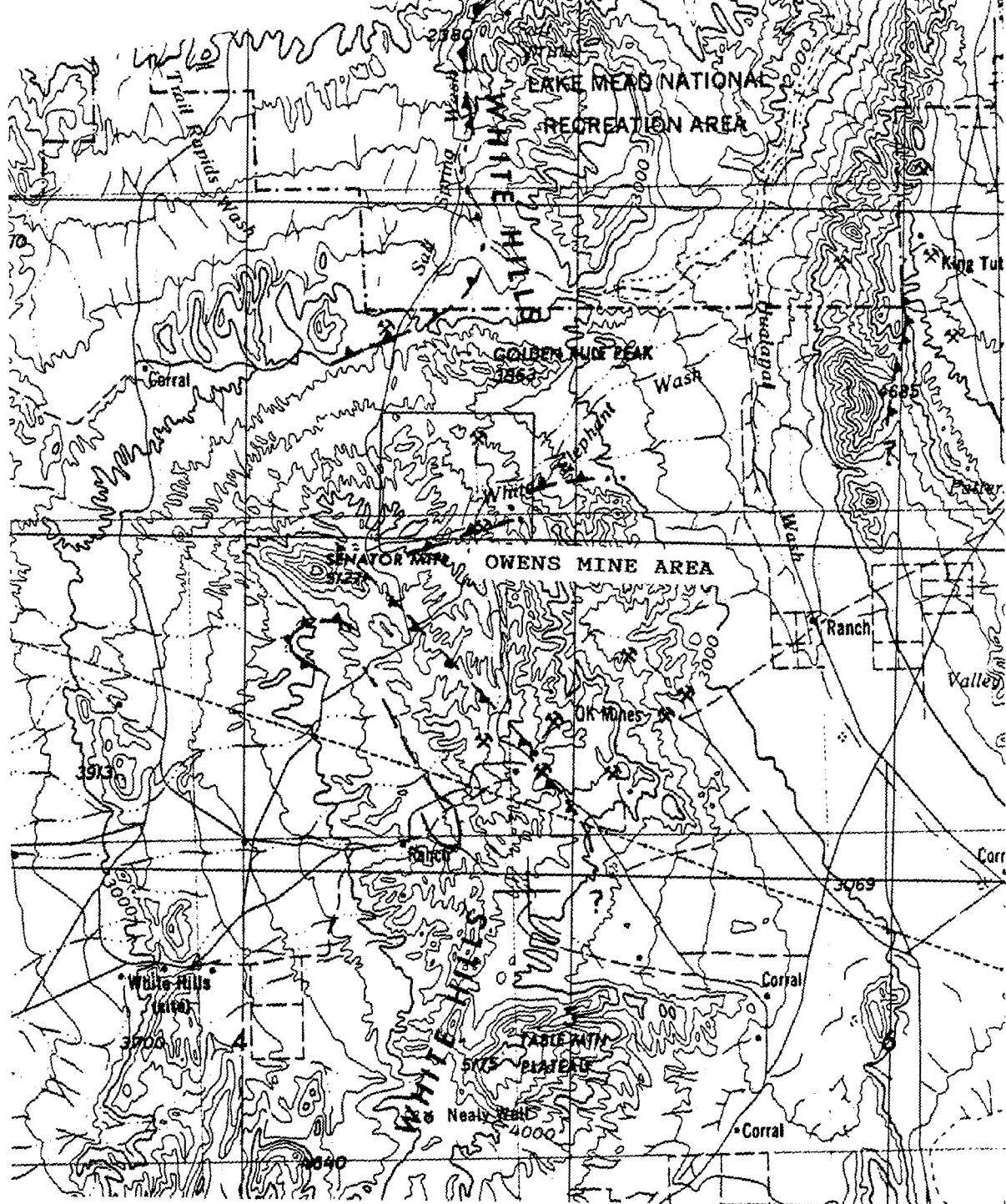
Summary

The Owens Mine Area is recommended as an area of exploration interest that has a favorable potential for concealed, detachment-hosted, bulk-tonnage gold mineralization. Appreciable gold mineralization and anomalous gold values occur adjacent to post-ore cover in the lower part of the detachment fault zone over a distance of more than a mile in the vicinity of the Owens Mine. Previous drilling in the area was concentrated on and in the vicinity of exposed mineralization and exploration was inhibited both by the post-ore cover and the land situation, since most of the covered area of interest is owned by the State or Santa Fe. Compiled generalized geologic data and drill hole data from Mapco and ACNC indicates that the detachment fault zone should be present beneath most of the area of post-ore cover and that the cover will vary from 100 to perhaps 300 feet in thickness. Known gold mineralization at the Owens Mine is a remnant of more extensive mineralization preserved in the footwall of a post-mineral, low-angle fault superimposed on the detachment fault zone. Geologic and drill hole data indicate that the displaced detachment fault zone and associated gold mineralization should be present beneath cover north and east of the area drilled. Detailed geologic mapping of the area is recommended to complement planned airborne geophysical surveys. A thorough appraisal of the land situation and evaluation of the geologic and geophysical data is recommended prior to initiating drilling in the area. A suggested initial drilling program, dependent on these evaluations is estimated to cost approximately \$50,000, and would consist of three fences of shallow, 300 to 500 foot drill holes designed to test geophysical anomalies, determine the thickness of cover, the position of the detachment fault zone, and the presence of alteration and mineralization within it.

General

The Owens Mine Area is located in the northern part of the Gold Basin Mining District near the NE corner of T28N, R19W. Mineralization at the Owens Mine is characterized by gold and copper-specularite in sheared and altered rocks within and in the footwall of the Gold Basin Detachment Fault Zone and is preserved in the footwall of a post-mineral, low-angle fault. The extensive gold mineralization in the area is adjacent to relatively thin post-mineral cover and the area offers exploration potential for concealed, bulk-tonnage, detachment-hosted gold mineralization. The Owens Mine was located prior to 1890 and the property consists of five unpatented claims on 80 acres that was excluded from the Santa Fe Railroad land grant. The mine workings include three closely-spaced shafts, two adits and numerous cuts. Mine production is not known, but was probably less than 1,000 tons of gold-copper ore.

During the 1980's the Owens Mine area was extensively explored by Mapco, Nerco, and ACNC (American Copper and Nickel Co.). Mapco acquired the property in the early 1980's and drilled 53 shallow holes in the vicinity of the Owens Mine. Nerco continued the exploration program after they acquired Mapco's mineral properties in 1984 and ACNC obtained the property in 1985 as part of a larger joint venture



Index Map Showing Location of

Owens Mine Area

Gold Basin Mining District, Mohave County, Arizona

Detachment Fault

Owens Mine Area

with Nerco. During 1985 - 1987 ACNC mapped the property on a 1:6,000 scale, carried out extensive soil geochemical sampling, ran approximately six line miles of inconclusive IP and magnetic surveys, and drilled 5 holes in Section 2 on the western extension of the Owens mineralization and 2 holes in the lower part of the detachment fault zone in Section 10 approximately 2 miles southwest of the Owens Mine. Their drilling results were discouraging and ACNC subsequently terminated the joint venture. Nerco terminated their State leases and abandoned their claims in 1987 and most of the land has since been re-staked and acquired by various individuals. The previous drilling by Mapco-Nerco and ACNC was concentrated on exposed mineralization in the lower part of the detachment fault zone adjacent to post-ore cover. Exploration north and east of the Owens Mine was limited by the land situation since they did not acquire any Santa Fe land. Mapco's detailed drilling indicated a resource of 385,000 tons @ .026 oz Au/T at the Owens Mine and ACNC's drilling several thousand feet to the west encountered extensive but weak gold mineralization.

Accompanying this report are a generalized geologic map and sections of the area, a generalized land map and a sketch map and sections showing the distribution of mineralization and drill holes at the Owens Mine. The geologic data presented is generalized and is based on data compiled from several different sources supplemented by limited field observations and Mapco drill hole data. The ACNC drilling results were reviewed in an earlier report.

Geology

The Gold Basin Detachment Fault Zone is the major geologic feature of the Owens Mine area. The fault zone is a 200 to 400 foot thick, poorly exposed, sub-horizontal zone of shearing and closely-spaced coalesced listric faults. Basement rocks beneath the fault are Precambrian granites and amphibolite grade gneiss. The detachment fault zone can be best visualized as a separate lithotectonic unit, incorporating numerous thin fault slivers and slices of the various Precambrian rocks, underlain by competent, cohesive basement rocks, and overlain by relatively thick fault-bounded slices of structurally-rotated Tertiary volcanics and fanglomerate as well as the various Precambrian units.

The detachment fault zone is concealed and probably preserved beneath the extensive Quaternary alluvium and Late Tertiary fanglomerate cover north of the Owens Mine. Limited exposures of structurally rotated Tertiary fanglomerate indicate that the upper plate of the detachment fault zone is present one to two miles northwest of the Owens Mine and may occur as isolated remnants preserved in down-dropped fault blocks beneath the alluvial and late fanglomerate cover. The detachment fault and upper plate Tertiary fanglomerate are also exposed on the south side of White Elephant Wash approximately 1½ miles northeast of the Owens Mine. Mapco's drill data indicates that the detachment fault has been stepped up beneath cover by post-detachment faulting and suggests that the fanglomerate at depth north of the mine may also be the older Tertiary fanglomerate. The wide, flat valley of White Elephant Wash is believed to be a topographic reflection of the non-resistant and easily eroded detachment fault zone with the intensely sheared granite and metamorphic rocks exposed in Section 30 reflecting a position in the lower part of the fault zone.

The Late Tertiary fanglomerate and Quaternary alluvium appear to have been deposited on a surface of moderate to gentle relief. The estimated thickness of the Quaternary alluvium is approximately 30 to 50 feet and the post-ore fanglomerate varies in probable thickness from 100 feet along valleys up to 300 feet beneath the higher ridges.

The Mapco and ACNC drill data and exposures at the Owens Mine indicate that post-mineral, high-angle faults offset mineralization and the detachment fault. Post-mineral fault offset is probable along other northeast-trending faults but can not be defined without detailed mapping of the area. As shown on the accompanying sketch and sections a prominent low-angle fault at the mine offsets mineralization and superimposes unaltered, lithified fanglomerate against intensely-sheared, mineralized gneiss. A parallel high-angle (?) fault four hundred feet to the north also offsets the detachment fault zone and the fanglomerate. ACNC mapped the fault adjacent to their drill holes in Section 2 as the same fault as that down-dropping fanglomerate against gneiss at the Owens Mine. However, their descriptions of unaltered and unmineralized gneiss beneath the fanglomerate suggests instead that the pre-fanglomerate movement may have uplifted the unmineralized footwall of the detachment fault zone, as is also suggested by the wide exposure of footwall sheared gneiss farther to the west in Section 3. Definition of fault offset of the detachment fault zone and mineralization is complicated by the difficulty in separating the two Tertiary fanglomerate units and indications that there was fault offset prior to deposition of the Late Tertiary fanglomerate as well as later.

Mineralization

The mineralization at the Owens Mine is described in old reports as a wedge-shaped, 700 foot wide, 50 to 150 foot thick zone of closely-spaced veins and veinlets containing gold and copper values. The mineralized zone strikes northwest, is near the base of the detachment fault zone, includes siderite-altered and intensely-sheared gneiss, and is a probable preserved remnant of more extensive mineralization cut off by a low-angle, post-mineral fault that juxtaposes unmineralized fanglomerate against the mineralized gneiss. As shown on the accompanying sketch map, Mapco's drilling was concentrated in the immediate vicinity of the old mine workings and their drill indicated resource of 385,000 tons @ .026 oz Au/T is located at shallow depth in this area.

Brief examinations indicate that the gold and copper-specularite mineralization is associated with a low-sulfide, siderite-hematite type of alteration with intensity of alteration and mineralization diminishing rapidly with increasing distance south of the workings and with depth below the detachment fault zone. Post-mineral fanglomerate and alluvium conceal the detachment fault and associated alteration to the north and east but isolated exposures and numerous drill holes indicate that the detachment fault zone and associated alteration and mineralization continue for more than a mile west of the Owens Mine.

Limited observations suggest the presence of three superimposed and perhaps related types of mineralization in the area, localized and hosted by the permeable, sheared rocks of the detachment fault zone.

1. Quartz-siderite-chalcopyrite-specularite seams, veinlets, and irregular replacements.
2. Vuggy quartz-pyrite veins and veinlets.
3. Diffuse, non-vein gold mineralization with little associated sulfides or silica and generally similar to the detachment-hosted mineralization near the Cyclopic Mine.

Judging from the selected ore piled near the old workings, the vuggy quartz-pyrite veins and veinlets contain substantial gold values and may represent feeder veins in the footwall of the detachment fault zone. The ACNC drill data indicates that the extensive, weak gold mineralization hosted by the detachment fault zone in Section 2 west of the Owens Mine is not associated with copper or specularite or appreciable introduced silica or sulfides, but instead is more closely associated with brecciated mafic dikes, carbonate alteration and increased shearing and brecciation. The limited data suggests that detachment-hosted gold mineralization in the Owens area is complex and like mineralization at the Cyclopic-Red Cloud properties, may not be directly associated with appreciable amounts of introduced silica or sulfides.

Mapco's Drilling Results

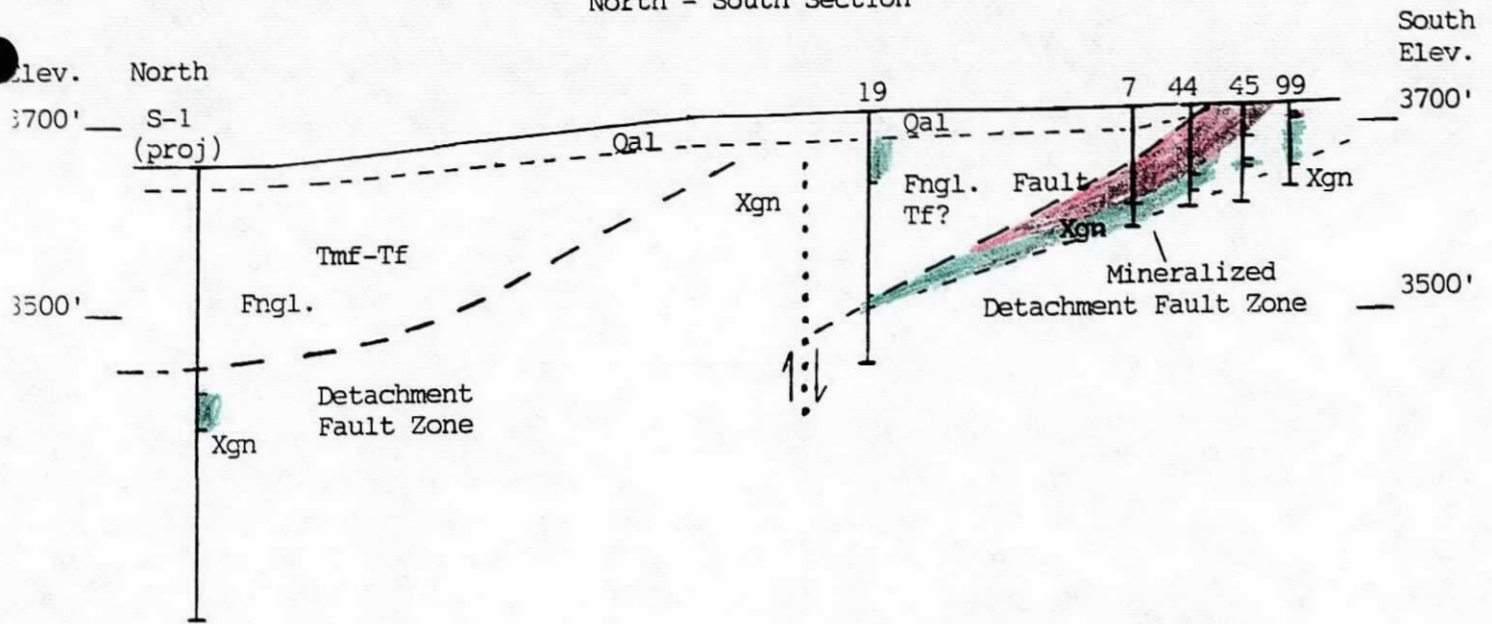
Mapco drilled 53 shallow holes in the Owens Mine area in 1983 and 1984 evaluating the potential of the near-surface mineralization at the mine and along the trace of the detachment fault zone to the west. The distribution of drill holes is shown on the accompanying 2400 scale sketch map and the results are illustrated on the following tabulation and on the map and sections.

Gold mineralization at the Owens Mine is preserved in the footwall of a low-angle, post-mineral fault that places unmineralized, lithified conglomerate against altered and mineralized gneiss. As illustrated on the accompanying sections, the fault cuts off the down-dip projection of better grade mineralization and there is little potential for substantial additional tonnage in the near vicinity of Mapco's drill holes. North-south and northeast-trending, post-mineral faults also offset the detachment fault zone and mineralization. Mapco's data indicates that the low-grade mineralization in the detachment fault zone has continuity between holes and is enveloped in a larger volume of sheared and altered gneiss with anomalous gold values. Intercepts at greater depth and distance from the fault are characterized by erratic spikes of higher values derived from thin veins. All drill holes were vertical and there apparently was no attempt to check the area of obvious steeply-dipping veins and veinlets near the old workings with angle drill holes.

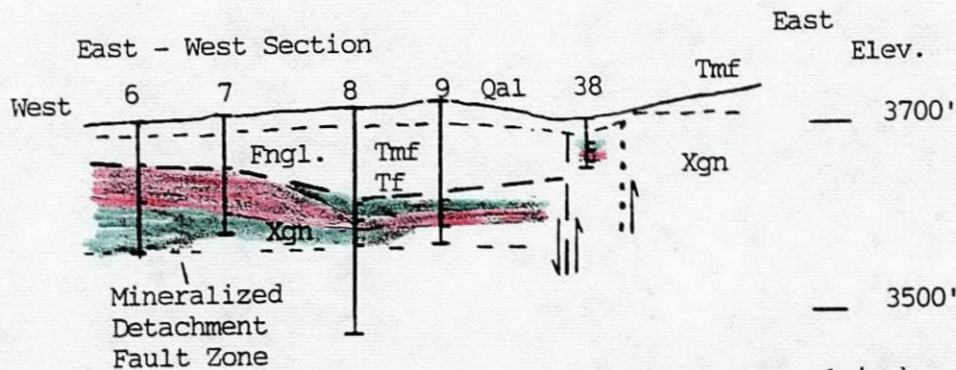
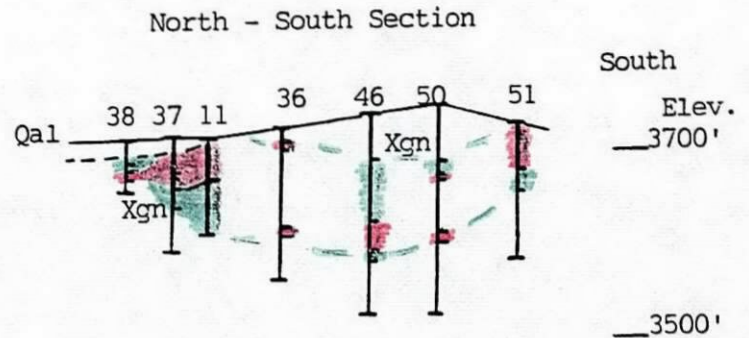
Mapco did not recognize the significance of the detachment faulting and did not attempt to expand the area of mineralization any significant distance to the north and east. They show a north-south probable post-mineral fault as the eastern limit of mineralization. All of the holes adjacent to this fault intersected appreciable gold values indicating that mineralization should continue in the offset detachment fault zone where it is preserved beneath cover to the north and east.

With the exception of drill holes 83-19 and 83-S-1, located approximately 400 feet and 1200 feet north of the mine, all of Mapco's drilling was located in close proximity to exposures of sheared and altered gneiss in the lower part of the de-

- 6 -
 Sections Through Mapco Drill Holes at Owens Mine
 Gold Basin District, Mohave County, Arizona
 North - South Section



Gold Mineralization
 > .01 oz Au/T
 < .01 oz Au/T



Scale 1 inch = 200 feet
 Horizontal = Vertical

R.M. Corn May, 1991

MAPCO DRILL HOLES
OWENS MINE PROJECT

0.01 oz/T Cut-off

HOLE #	TRUE THICKNESS (ft)	AVG. GRADE (oz/T)	Mineralized Interval	TD	Base Fangl.	Anomalous Interval
OM 83-S-1	Anomalous Zone		240-279	486	215	240-279
OM83-4	24	.022	27-63	303	Qa1-24	63-112
OM83-5	26	.028	33-78	105	Qa1-24	
OM83-6	26	.024	51-86	144	48	86-144
OM83-7	31	.028	60-102	126	57	102-126
OM83-8	7	.056	120-129	240	96	102-147
OM83-9	15	.063	114-132	150	90	105-114 132-TD
OM83-10	24	.041	27-90	117	Qa1-27	90-117
OM83-11	24	.023	0-45	105		45-TD
OM83-12	28	.034	3-54	78	Qa1-3	54-TD
OM83-16	Not Anomalous			183	123	
OM83-19	Not Anomalous			264	201	27-74
OM83-23	Not Anomalous			159	69	192-206
OM83-28	3	.015	48-51	114	Qa1-30	33-93
OM83-29	3	.013	99-102	141	Qa1-24	75-112
OM83-33	3	.013	12-15	165		3-165
OM83-34	5	.020	108-114	147	Qa1-30	30-147
OM83-35	2	.010	48-51	144	Qa1-12	6-144
OM84-36	9	.029	6-12	162		
OM84-37	20	.063	105-117	120	Qa1-15	54-75
OM84-38	8	.028	18-39	54	Qa1-18	
			45-54			
			36-45			
OM84-39	Not Anomalous			126	60	
OM84-40	Not Anomalous			165	Qa1-27	
OM84-41	Not Anomalous			126	60	
OM84-42	2	.011	24-27	195		57-60
OM84-43	29	.029	42-90	204	30	90-100
OM84-44	31	.019	24-74	105	Qa1-18	74-93
OM84-45	16	.012	3-36	105		66-69
OM84-46	17	.188	102-105	219		51-102
			114-147			147-153
OM84-47	Not Anomalous					
OM84-48	Not Anomalous			117	93	
OM84-49	3	.014	6-9	87		9-78

Owens Mine Area
Mapco Drill Holes

Hole No.	Td	Base Fngl.	Mineralized Interval	Feet	Avg. Grade oz Au/T	Anomalous Interval
OM 84-50	225		75-78 138-147	3 9	.023 .021	
OM 84-51	144		9-51	42	.016	51-75
OM 84-52	204		42-48 108-111	6 3	.019 .012	90-126
OM 84-53	183		84-90 111-114	6 3	.016 .038	12-39 111-141
OM 84-54	175	Qal-18	No mineralization			
OM 84-55	155	50	No mineralization			
OM 84-56	185	102	No mineralization			
OM 84-57	125	27	No mineralization			
OM 84-58	85	30	No mineralization			
OM 84-59	145		35-40	5	.012	
OM 84-60	145	Qal-15	No mineralization			
OM 84-61	145	60	No mineralization			
OM 84-62	185	70	No mineralization			
OM 84-63	240	120	150-160	10	.011	120-170
OM 84-64	260	88	No mineralization			105-110 205-210
OM 84-65	185		20-50	30	.015	50-70
OM 84-66	245		10-15 170-185	5 15	.013 .013	5-215
OM 84-67	105	55	No mineralization			60-70
OM 84-68	285	50	No mineralization			50-85
OM 84-69	115	105	No mineralization			
OM 84-70	215		No mineralization			20-35

MAPCO DRILL HOLES
OWENS MINE PROJECT - SUMMARY

HOLE #	0.01 oz/T Cut-off		0.03 oz/T Cut-off	
	TRUE THICKNESS (ft)	AVG. GRADE (oz/T)	TRUE THICKNESS (ft)	AVG. GRADE (oz/T)
OM 83-S-1	Anomalous Zone 240-279			
OM83-4	24	.022	8	.035
OM83-5	26	.028	8	.051
OM83-6	26	.024	5	.059
OM83-7	31	.028	13	.046
OM83-8	7	.056	5	.078
OM83-9	15	.063	8	.096
OM83-10	24	.041	8	.098
OM83-11	24	.023	5	.053
OM83-12	28	.034	13	.052
OM83-16	Not Anomalous		--	--
OM83-19	Not Anomalous		--	--
OM83-23	Not Anomalous		--	--
OM83-28	3	.015	--	--
OM83-29	3	.013	--	--
OM83-33	3	.013	--	--
OM83-34	5	.020	2	.030
OM83-35	2	.010	--	--
OM84-36	9	.029	3	.048
OM84-37	20	.063	12	.092
OM84-38	8	.028	5	.039
OM84-39	Not Anomalous		--	--
OM84-40	Not Anomalous		--	--
OM84-41	Not Anomalous		--	--
OM84-42	2	.011	--	--
OM84-43	29	.029	13	.042
OM84-44	31	.019	5	.037
OM84-45	16	.012	--	--
OM84-46	17	.188	8	.392
OM84-47	Not Anomalous		--	--
OM84-48	Not Anomalous		--	--
OM84-49	3	.014	--	--

tachment fault zone. Results from these two holes indicate that the detachment fault zone is stepped up beneath cover by post-detachment faulting, that the fanglomerate cover remains relatively thin over a substantial area, and that alteration and weakly anomalous gold values continue to be associated with the detachment fault zone.

Land

The land situation in the Owens Mine Area is shown on the attached generalized land map. The area is within the railroad "checker board" of Mohave County and alternate sections are owned by the Santa Fe Railroad. The Owens Mine property itself consists of 80 acres, five unpatented claims owned by Helen Martin, and is surrounded by mineral holdings of Santa Fe and the State of Arizona. The Mapco-Nerco claims in Section 10, T28N, R19W and Sections 26 and 34, R19W were abandoned in 1987 and have since been relocated by several different individuals. The Nerco State leases on Section 2, T28N, R19W and Section 36, T29N, R19W were also terminated in 1987 and Prospecting Permits on the State land are held by R.C. Johnson, Lakewood, Colorado.

Data from ACNC indicates that they tried to obtain leases from Santa Fe but lost interest after Santa Fe indicated that the land would be available only under a joint venture arrangement. This land relationship helps to explain the lack of drilling on Santa Fe ground north and east of the exposed mineralization. Santa Fe's policy on land in the area has since changed and they have leased several sections at Gold Basin to the Toltec-Consolidated Rhodes venture.

Any substantial exploration effort directed toward the concealed detachment fault zone in the Owens Mine area would require leases from the State and Santa Fe. A thorough appraisal of lease terms, costs, and problems is advised prior to investing substantial time and exploration effort in the area.

Recommendations

The Owens Mine Area is recommended as an area of exploration interest that has a favorable exploration potential for concealed, detachment-hosted, bulk-tonnage gold mineralization. The area exhibits extensive gold mineralization adjacent to relatively thin post-ore cover and previous exploration was inhibited by both cover and the land situation.

Airborne geophysical surveys are planned for the approximately three square mile area where post-ore cover conceals the detachment fault zone. Detailed geologic mapping and geochemical sampling around the periphery of the post-ore cover is recommended to complement and aid in the interpretation of the geophysical data.

A suggested initial drilling program, dependent on evaluation of the additional geologic and geophysical data, is estimated to cost approximately \$50,000 and would consist of three north-south fences of shallow (300 to 500 feet) drill holes designed to test any geophysical anomalies and determine (1), the thickness of post-ore cover (2), the position of the detachment fault zone beneath cover, and (3), the presence and distribution of alteration and mineralization in the detachment fault zone. The suggested drill hole fences are (1), a fence of shallow holes across the concealed fault zone east of the Owens Mine near the northeast corner of

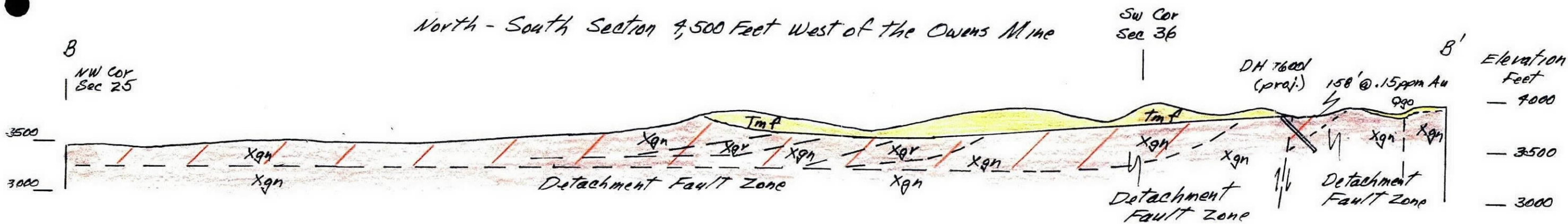
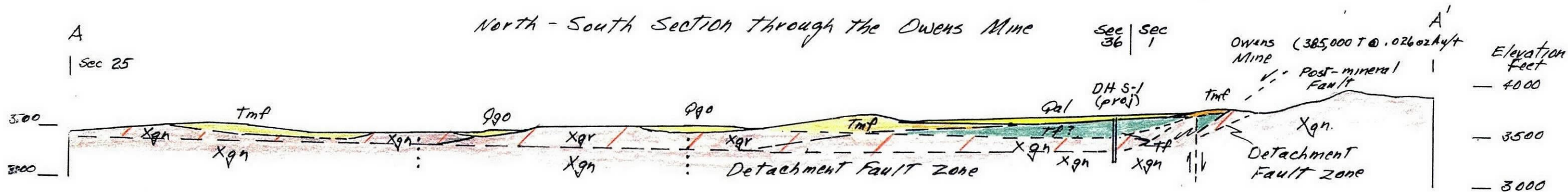
Section 1 (2), a fence of three or four widely-spaced holes located in Section 36 north of the Owens Mine and (3), a similar fence of widely-spaced holes across the southeastern part of Section 35.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Russell M. Corn", written over a horizontal line.

Russell M. Corn

North-South Sections Through The Owens Mine Area Gold Basin Mining District, Mohave County, Arizona



Scale 1 inch = 1,000 Feet
Horizontal = Vertical

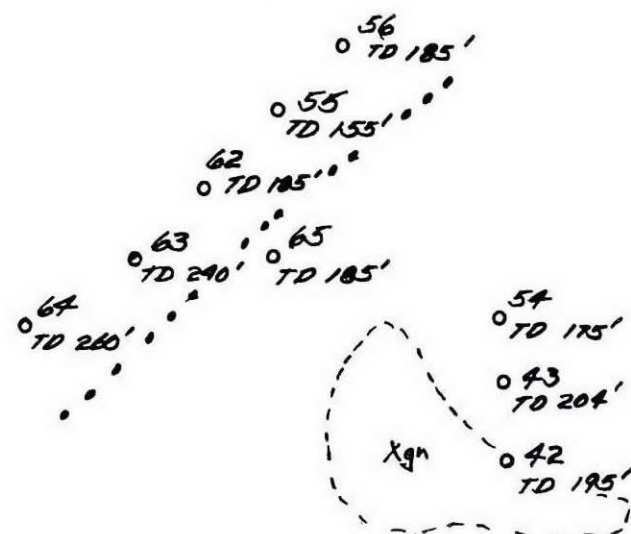
Detachment Fault Zone / / /

RM Corn May, 1991

T29 N
 Sec 2 | Sec 1
 T28 N

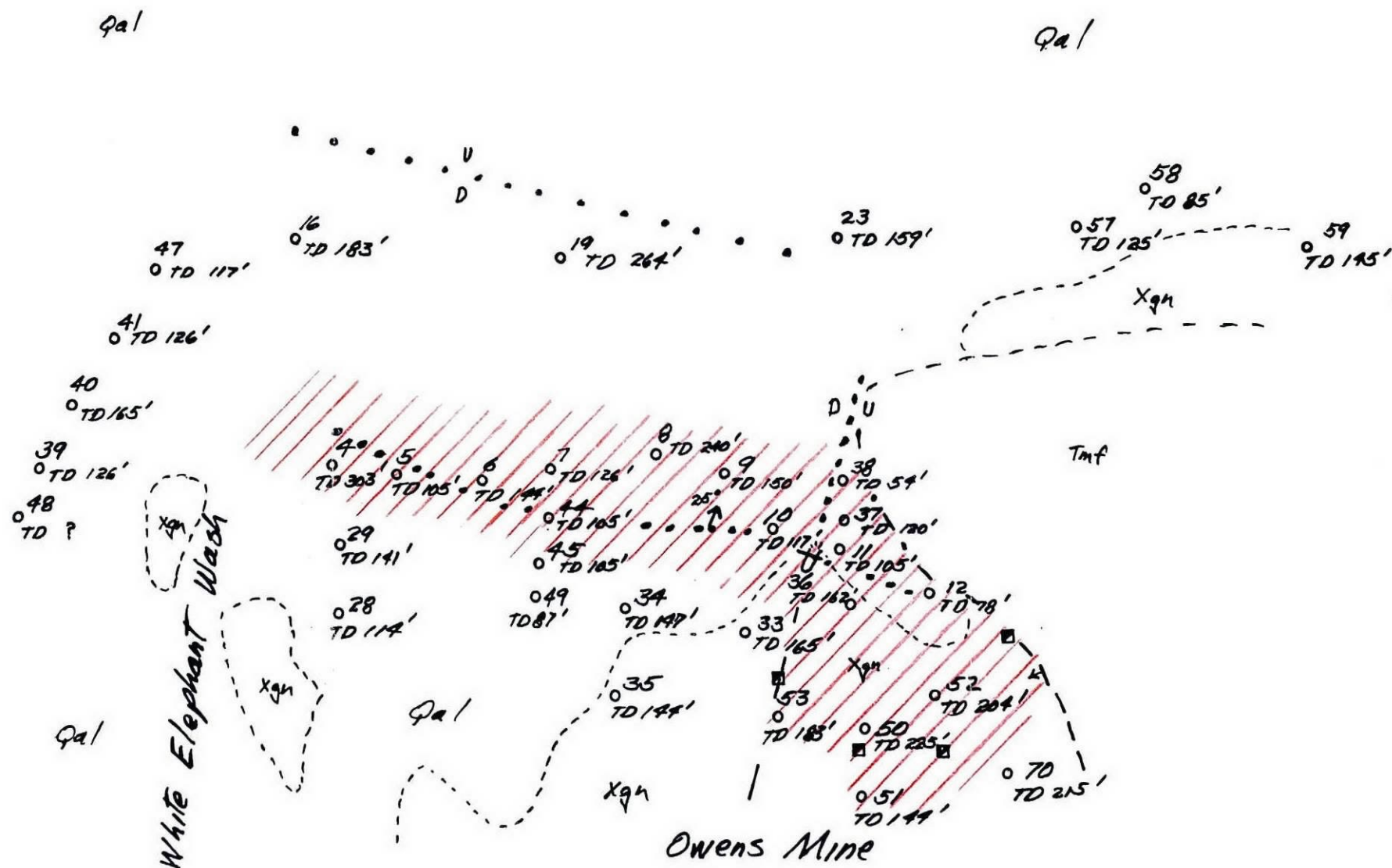
S-1
 TO 486'

R19W
 Sec 36



60
 TO 145'

61
 TO 145'



Sketch Map of Drill Holes at Owens Mine
 Gold Basin District, Mohave County, Arizona

- //// Mineralized Area
- Fault
- o TO Mapco Drill Hole

Scale 1 inch = 200 feet

RM Corn May, 1921

Geology modified from Mapco Data

GEOLOGIC MAP OF THE OWENS MINE AREA
Gold Basin Mining District, Mohave County, Arizona
Scale 1 inch = 1,000 feet
R.M. Corn May 1991

EXPLANATION

QUATERNARY

Qal - Alluvium
Qgo - Older gravels

LATE TERTIARY

Tmf - Fanglomerate

STRUCTURAL DISLOCATION SURFACE

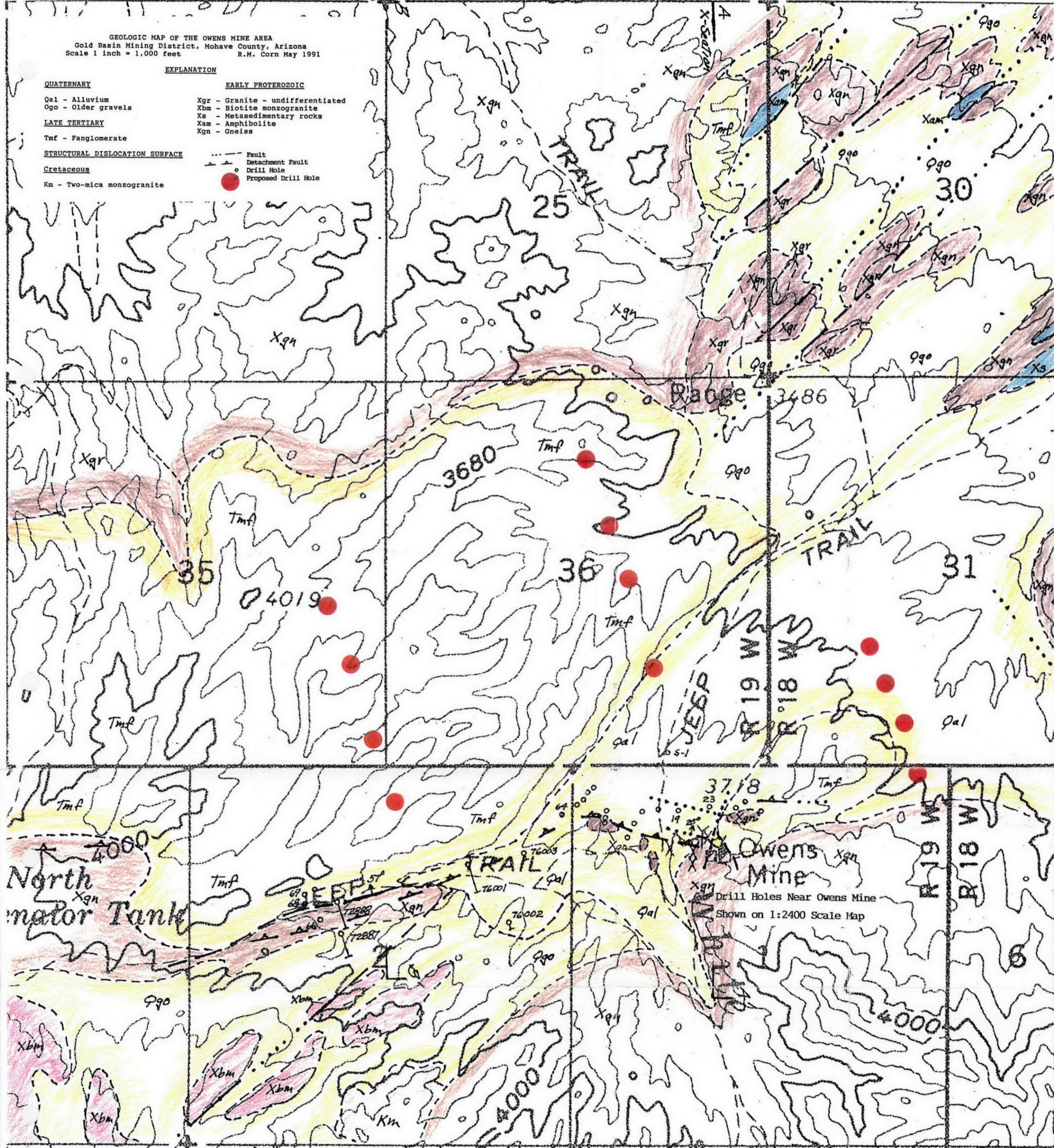
Cretaceous

Km - Two-mica monzogranite

EARLY PROTEROZOIC

Xgr - Granite - undifferentiated
Xbm - Biotite monzogranite
Xs - Metasedimentary rocks
Xam - Amphibolite
Xgn - Gneiss

--- Fault
--- Detachment Fault
o Drill Hole
o Proposed Drill Hole



Owens Mine
Drill Holes Near Owens Mine
Shown on 1:2400 Scale Map

3/91 JDS

RUSSELL M. CORN

Registered Geologist

8425 DESERT STEPPES DR.

TUCSON, ARIZONA 85710

PHONE 602 - 298-1770

March 21, 1991

James D. Sell
Manager, Southwestern Exploration
ASARCO, Inc.
P.O. Box 5747
Tucson, AZ 85703

Re: ACNC Drill Results
Owens Mine Area
Gold Basin Dist., Mohave Co., AZ

Attached is a copy of American Copper and Nickel's drill hole data for five drill holes located along the Detachment Fault Zone $\frac{1}{2}$ to 1 miles west of the Owens Mine and two drill holes located along the Fault Zone approximately one mile northwest of the Senator Mine. The drill holes were positioned in the lower part of the Detachment Fault Zone, tested extensive surface gold anomalies, and show a general pattern of weak gold values that diminish with increasing depth. The more intensely sheared, upper part of the Detachment Fault Zone is concealed by fanglomerate and gravel and was not tested by any of ACNC's drill holes. Mapco's prior drilling at the Owens Mine indicated a resource of 385,000 tons @ .026 oz Au/T.

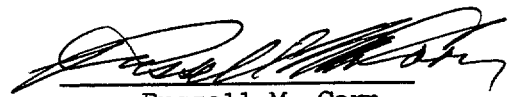
The Owens prospect was acquired by ACNC in 1985 as part of a joint venture with Nerco who had earlier acquired the property through their acquisition of Mapco's mineral properties. After completion of the 1987 drilling program, ACNC terminated the joint venture agreement on the prospect.

Surface geologic and geochemical investigations and previous drilling by Mapco outlined a large area of anomalous gold values (50 to 500 ppb) at the edge of gravel cover west of the Owens Mine. In 1985, ACNC drilled two holes (72887 and 72888) in the near vicinity of a tight cluster of four reportedly barren holes drilled earlier (1984) by Mapco, and in 1987, ACNC drilled three holes testing the eastern end of the anomaly (76001, 76002, and 76003). In general the drill holes intersected extensive weak gold values (76001 - 158 ft @ .15 ppm Au) that diminished with increasing depth. Higher gold values are described as related to zones of more intense shearing and ACNC's data suggests some high angle fault offset of the low-angle Detachment Fault Zone.

ACNC drilled two holes, 72889 and 72890, in the lower part of the Detachment Fault Zone approximately one mile northwest of the Senator Mine. The holes were located near surface gold anomalies at the base of the steep slope cut on the fault zone. They encountered sheared granite and gneiss with near-surface values of .005 to .01 oz Au/T that diminished with increasing depth.

The ACNC drill results indicate that extensive weak gold mineralization is associated with the Detachment Fault near Senator Mountain and the Owens Mine. ACNC's drilling did not test the upper, more intensely sheared, concealed part of the Detachment Fault Zone where higher-grade mineralization could be anticipated.

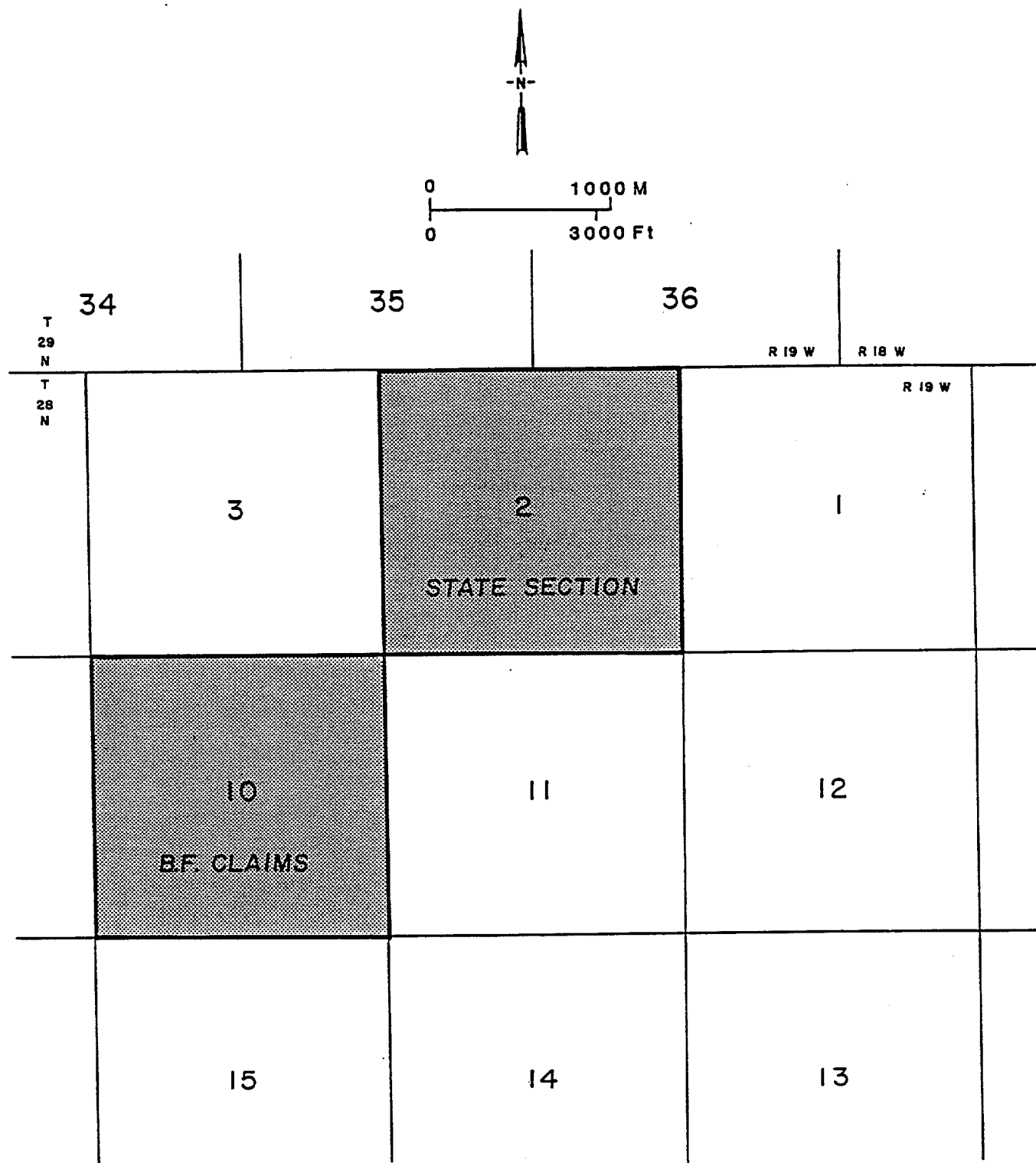
Respectfully Submitted,


Russell M. Corn

American Copper & Nickel Company, Inc.

OWENS MINE PROPERTY CLAIMS

Mohave County, Arizona



SECTION 2.

DRILL HOLE LOCATIONS

- ① 1987 Drill hole location
- 1985 Drill hole location
- Gold in soil anomalies >50 ppb

2

A horizontal scale bar labeled "FEET" is shown. It has markings at 500, 0, 500, and 1000. The bar is divided into four equal segments by these markings.

Figure

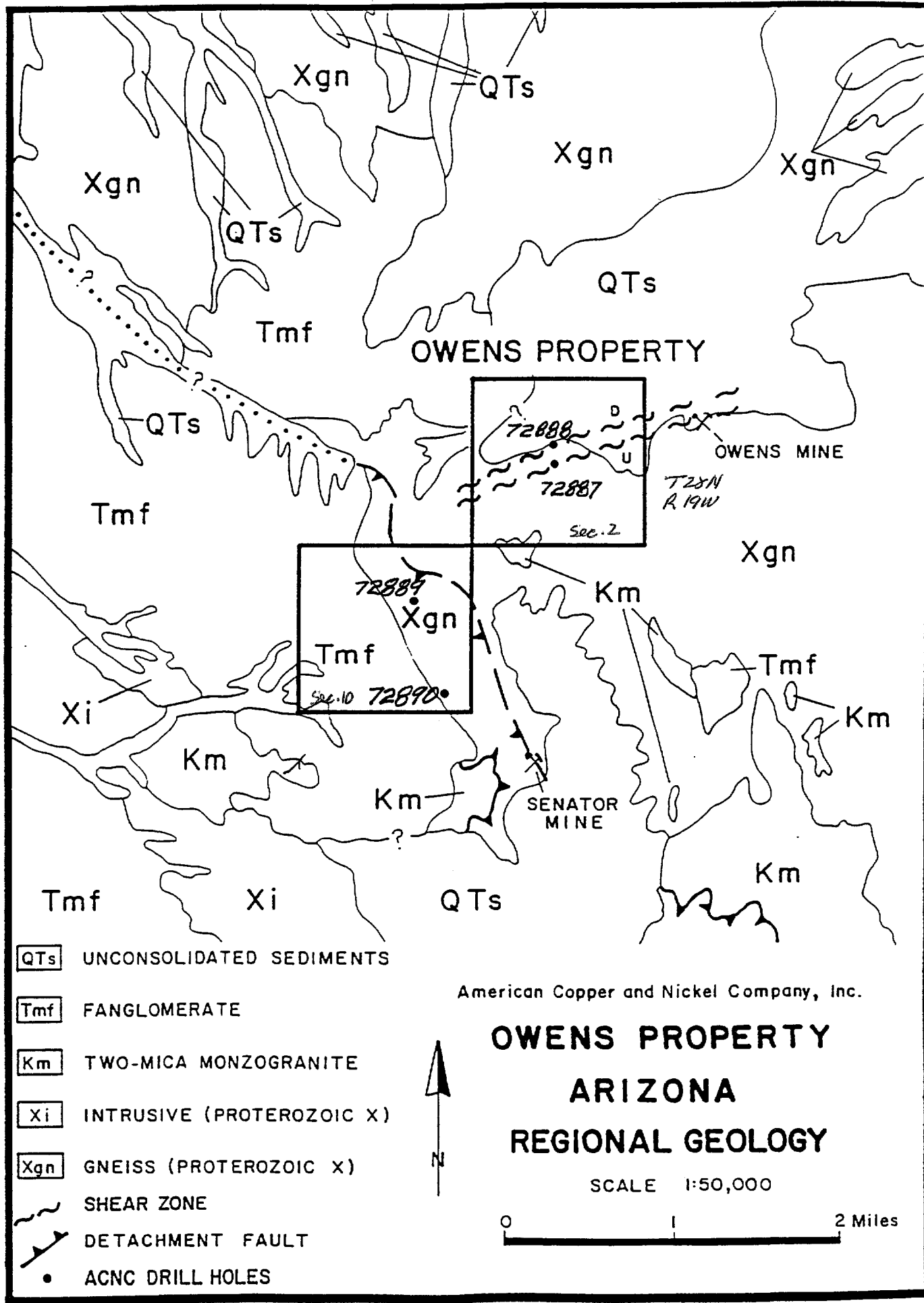


Figure 2.

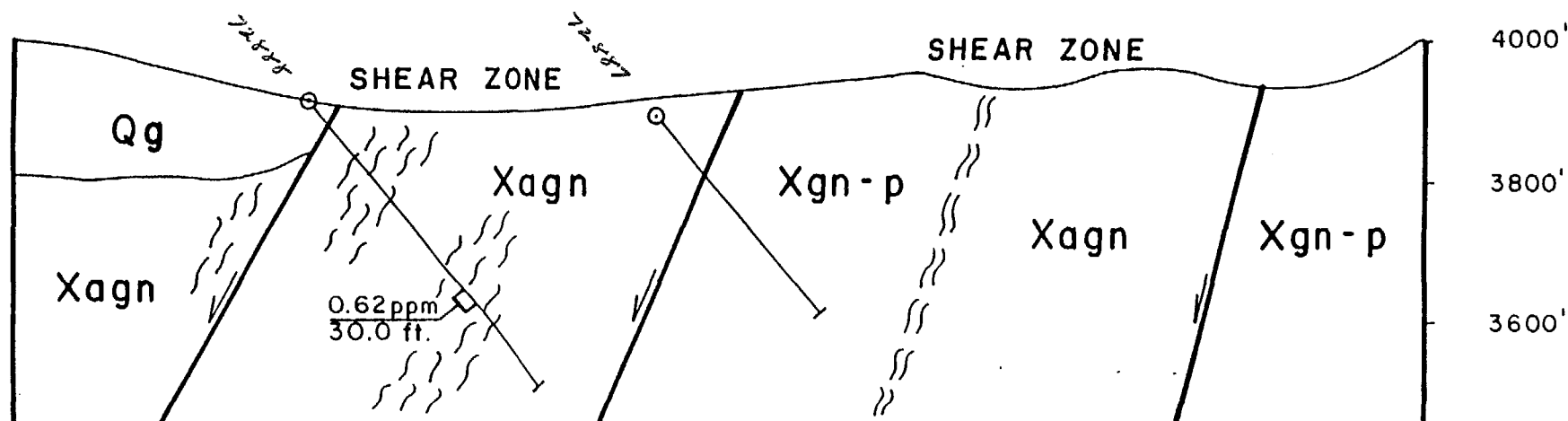
American Copper and Nickel Company, Inc.

OWENS MINE PROPERTY

Generalized Section, Section 2

NORTH

SOUTH



- Qg QUARTERNARY GRAVELS
- Xagn ALTERED GNEISS -- QUARTZ, PYRITE, CALCITE
- Xgnp GNEISS WITH PEGMATITES
- SHEARING ± QUARTZ VEINS

0 250 500
FEET

American Copper & Nickel Company, Inc.

ACNC-NDCO

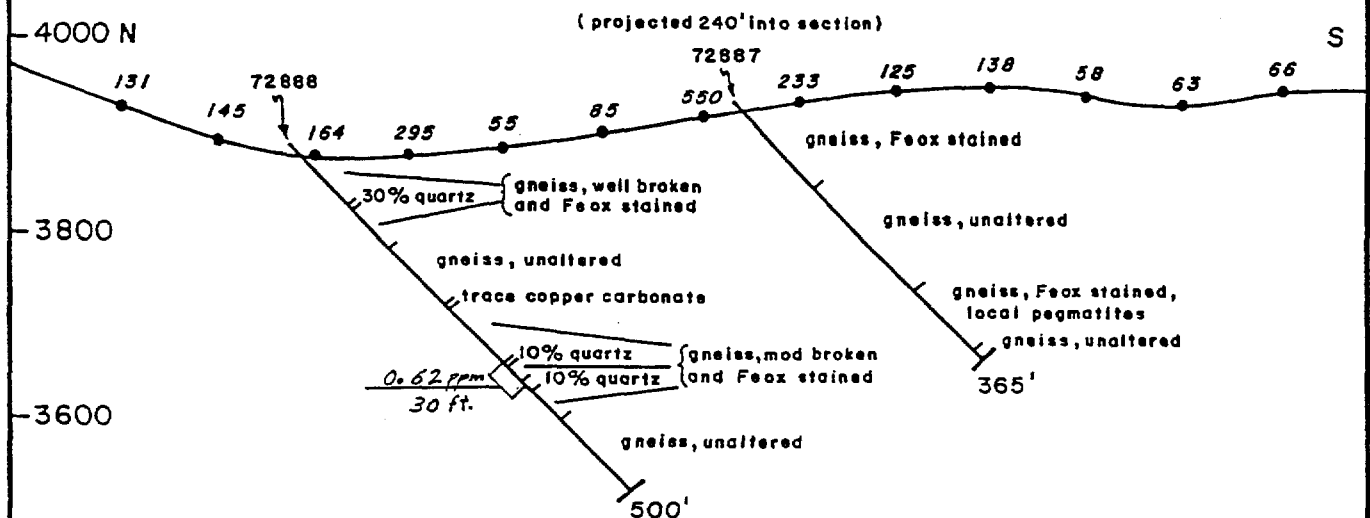
DRILL SECTION

Drill Holes 72888 & 72887

OWENS MINE PROPERTY
Mohave, Arizona

PREPARED BY: STEVE MORNIS

Section:2 Township:28N Range:19W



Section 160° / Looking East

• Soil sample sites projected 200' E into section, values in ppb gold.

0 100 200
FEET

American Copper & Nickel Company, Inc.

ACNC-NDCO

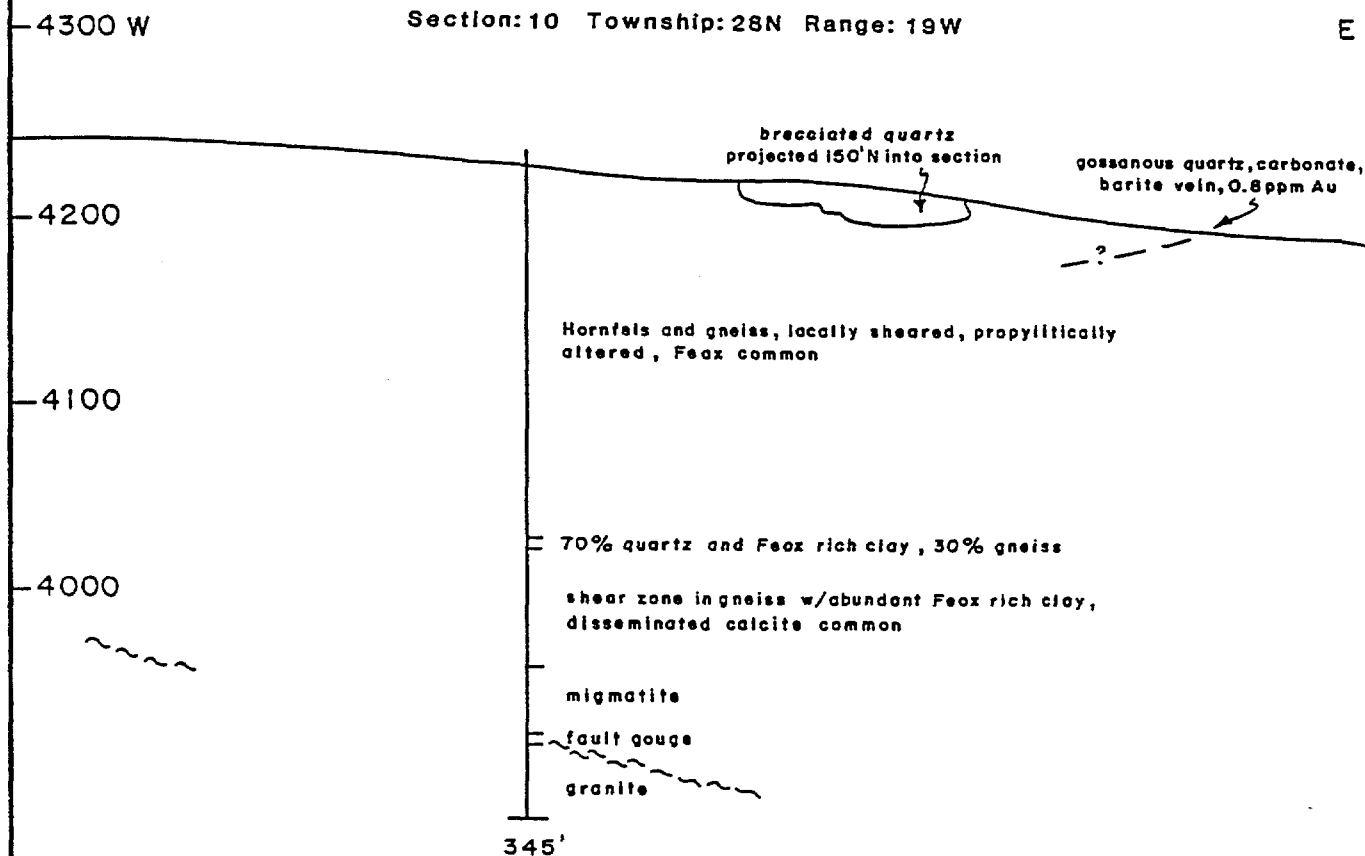
DRILL SECTION

Drill Hole 72889

OWENS MINE PROPERTY

Mohave, Arizona

PREPARED BY: STEVE MORNIS



Section 60° / Looking North

American Copper & Nickel Company, Inc.

ACNC-NDCO

DRILL SECTION

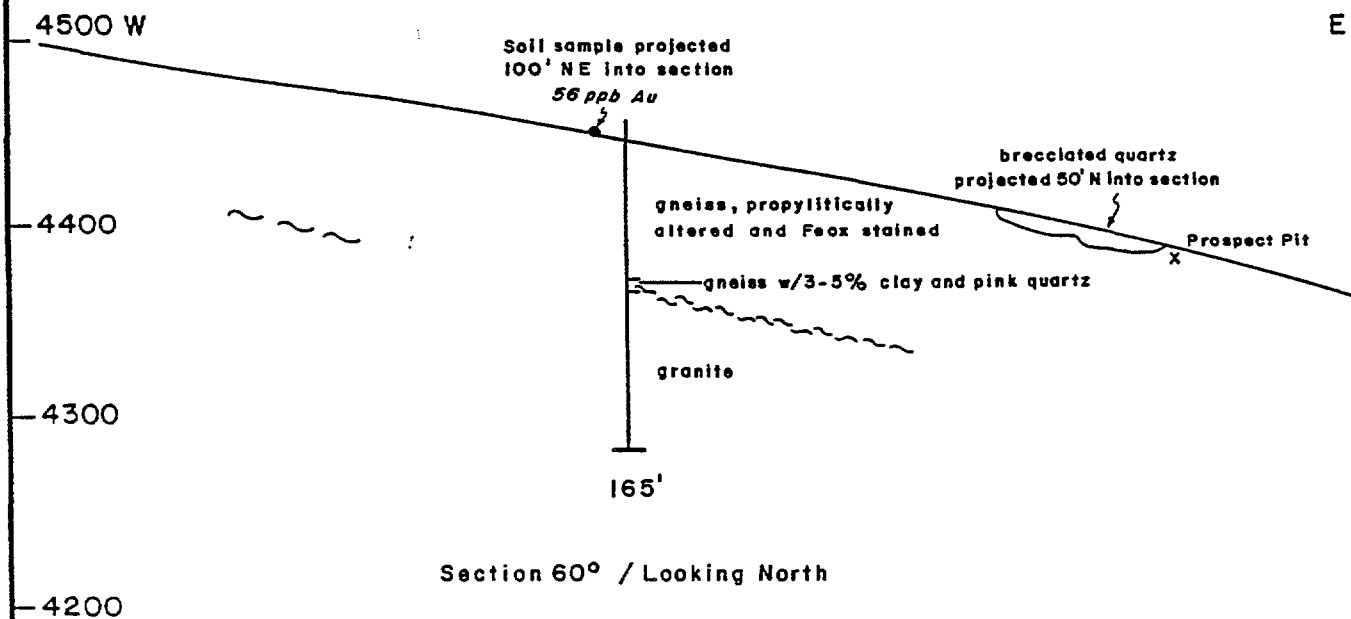
Drill Hole 72890

OWENS MINE PROPERTY

Mohave, Arizona

PREPARED BY: STEVE MORNIS

Section:10 Township:28N Range:19W



0 50 100
FEET

American Copper & Nickel Company, Inc.

ACNC-NDCO

DRILL SECTION Drill Hole No. 76001

OWENS MINE PROPERTY
Mohave County, Arizona

PREPARED BY: STEVE MORNIS

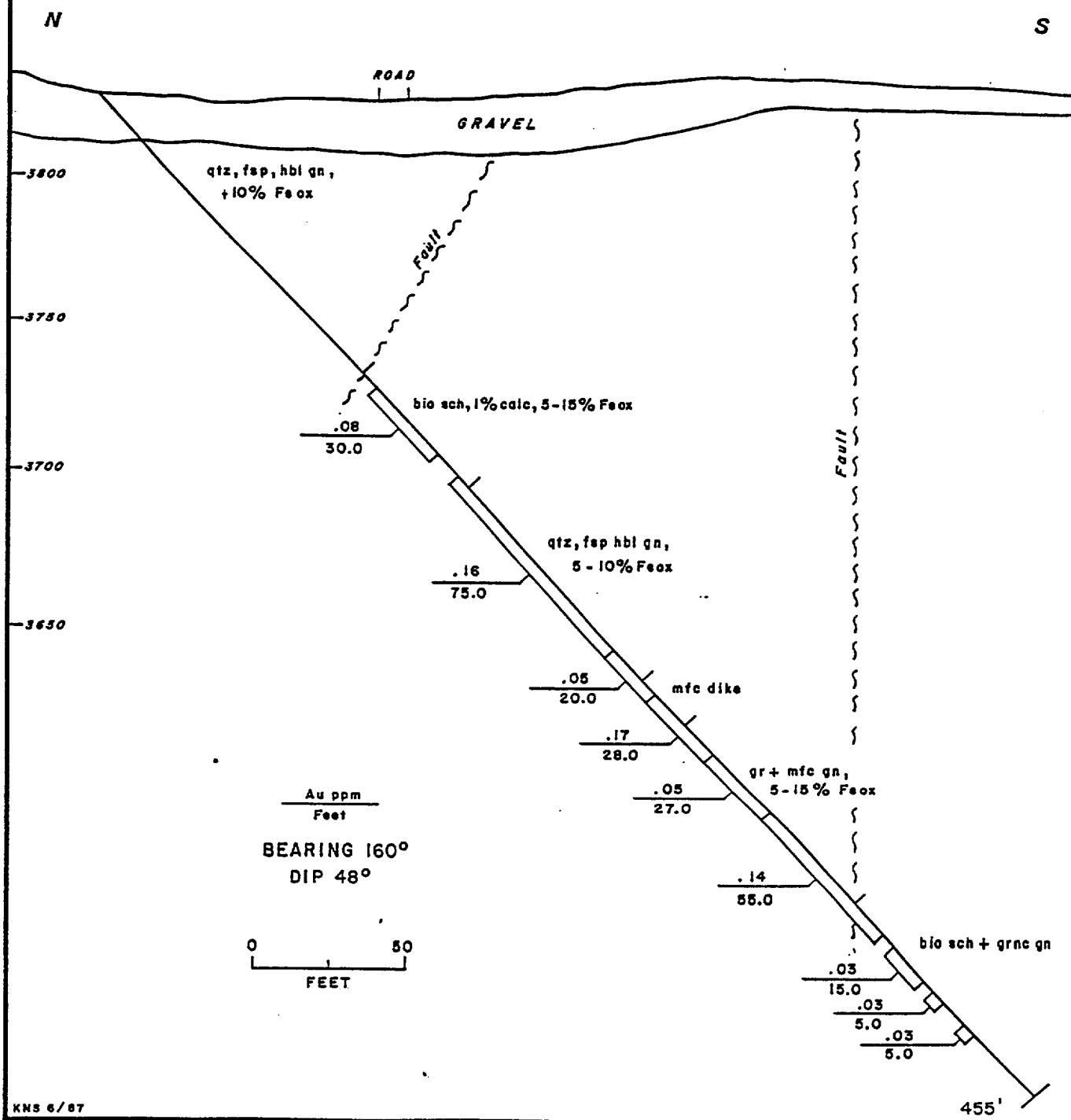


Figure 3.

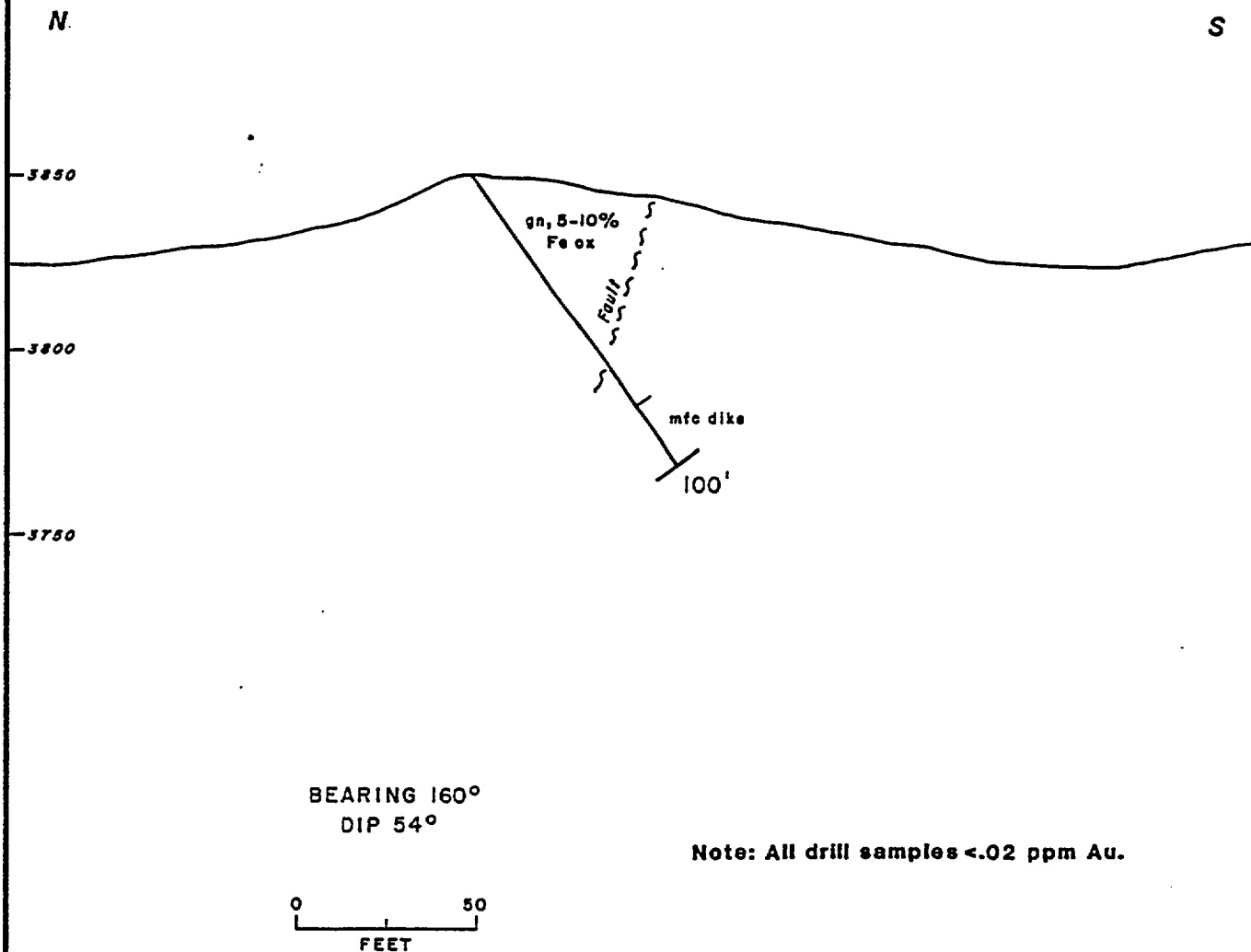
American Copper & Nickel Company, Inc.

ACNC-NDCO

DRILL SECTION Drill Hole No. 76002

OWENS MINE PROPERTY
Mohave County, Arizona

PREPARED BY: STEVE MORNIS



American Copper & Nickel Company, Inc.

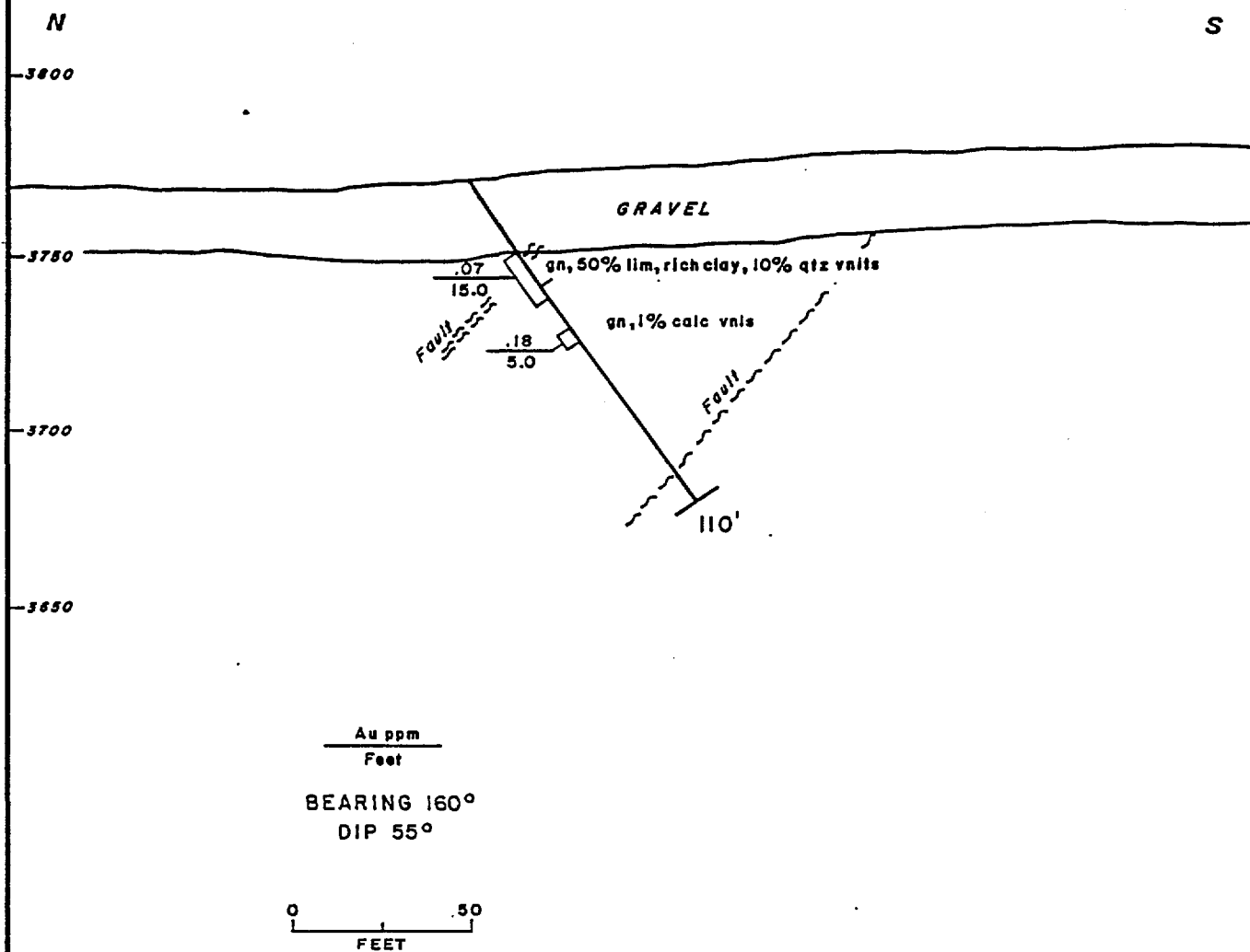
ACNC-NDCO

DRILL SECTION

Drill Hole No. 76003

OWENS MINE PROPERTY
Mohave County, Arizona

PREPARED BY: STEVE MORNIS



Attached

1. Mel Lahr & Steve Morris, Feb. 1987, Owens Property, Mohave Co., AZ, Gold Property. 13 pages plus Appendix A, drill sections, and Appendix B, drill logs,
2. Steve Morris, June 1987, Results of 1987 Drilling, Owens Project, Mohave Co., AZ., NDCO-ACNC Joint Venture. 3 pages, plus maps of location, drill hole sections 76001, 76002, & 76003, detailed section 2 drill holes - geology and gold values, and logs of drill holes.

W

E

T28N, R19W

Senator Mtn
Quad

Garnet Mtn
Quad

Elevation
feet

Sec 28 1/4 Cor Sec 27

Cyclopic
Mine
Xgn Kam

E 1/4 Cor
Sec 29, T28N, R19W

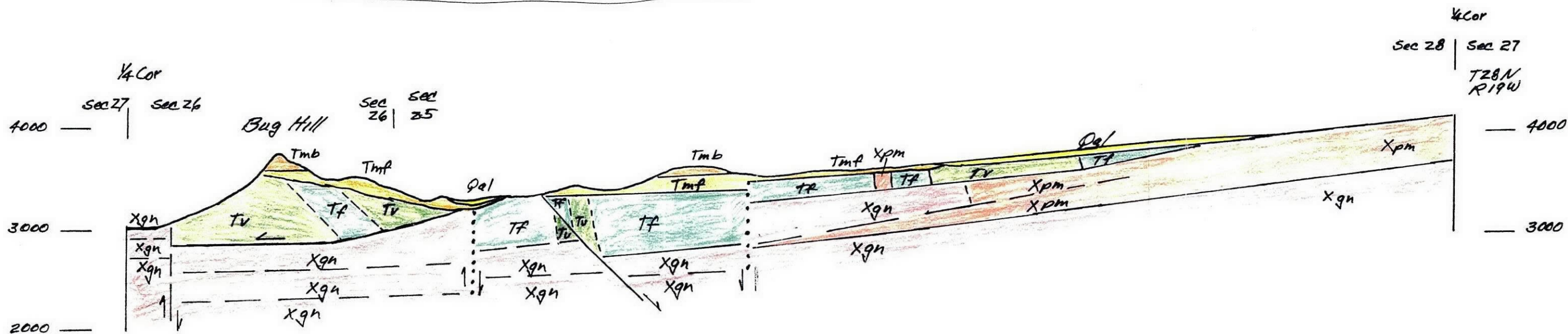
Elevation
feet

4000

4000

3000

3000



East - West Section From the Cyclopic Mine To the Bug Hills

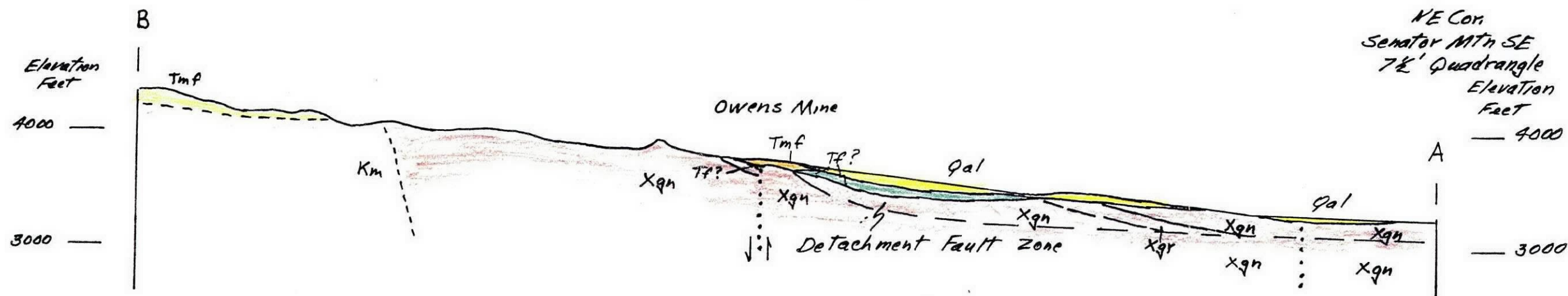
Gold Basin District, Mohave County, Arizona

RM Corn May 1991

Scale 1 inch = 1000 feet - Vertical
1 inch = 2000 feet - Horizontal

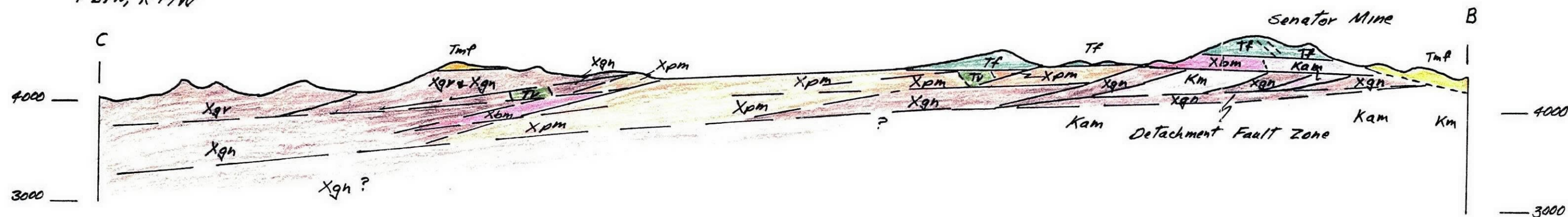
next sheet

Northeast - Southwest Section Illustrating the Gold Basin Detachment Fault
 In the Vicinity of the Owens and Senator Mines
 Gold Basin Mining District, Mohave County, Arizona



Looking Northwest

SW Cor Sec. 3
 T27N, R19W

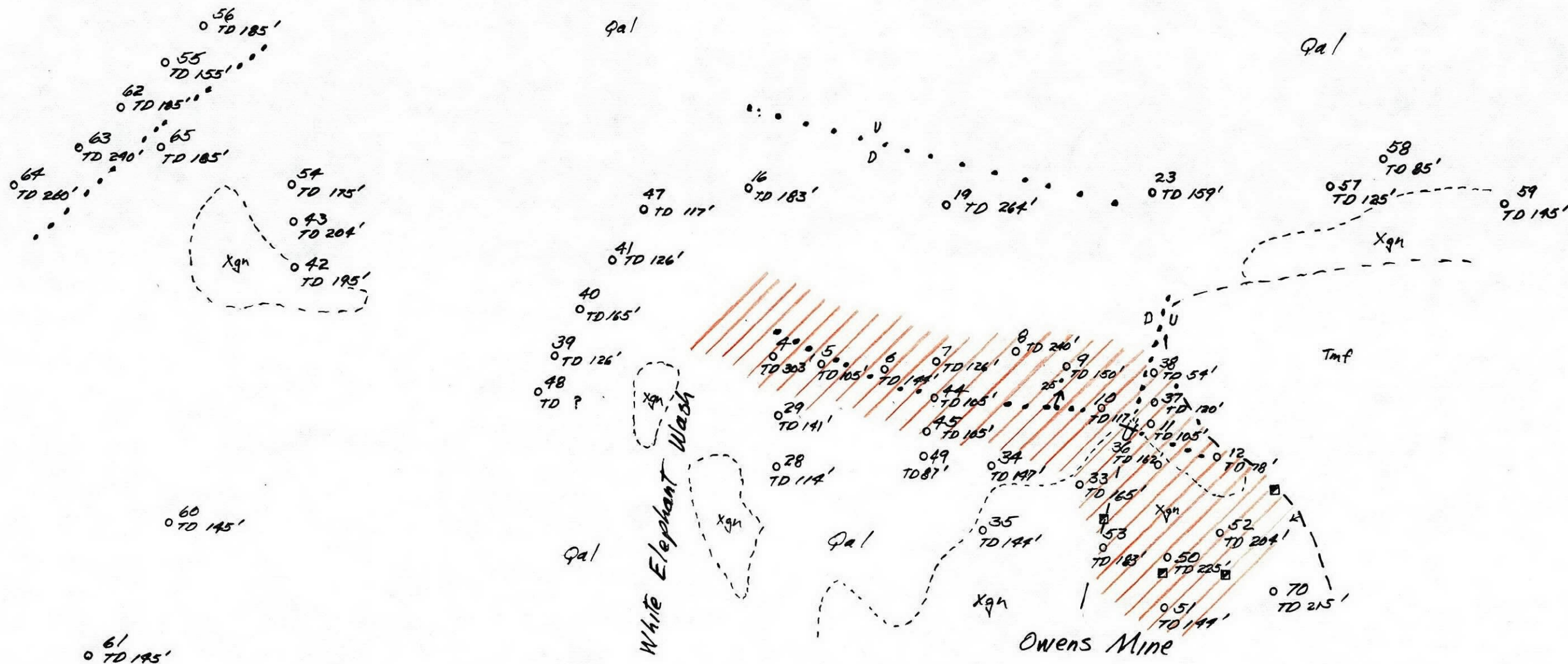
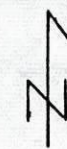


Scale 1 inch = 1000 ft - Vertical
 1 inch = 2000 ft - Horizontal

RM Corn May, 1991

T29N
 Sec 2 | Sec 1
 T28N

R19W
 sec 36



Sketch Map of Drill Holes at Owens Mine
 Gold Basin District, Mohave County, Arizona

Scale 1 inch = 200 feet

Geology modified from Mapco Data

- /// Mineralized Area
- Fault
- TD Mapco Drill Hole

RM Corn May, 1921

GEOLOGIC MAP OF THE OWENS MINE AREA
Gold Basin Mining District, Mohave County, Arizona
Scale 1 inch = 1,000 feet R.M. Corn May 1991

EXPLANATION

QUATERNARY

Qal - Alluvium
Qgo - Older gravels

LATE TERTIARY

Tmf - Fanglomerate

STRUCTURAL DISLOCATION SURFACE

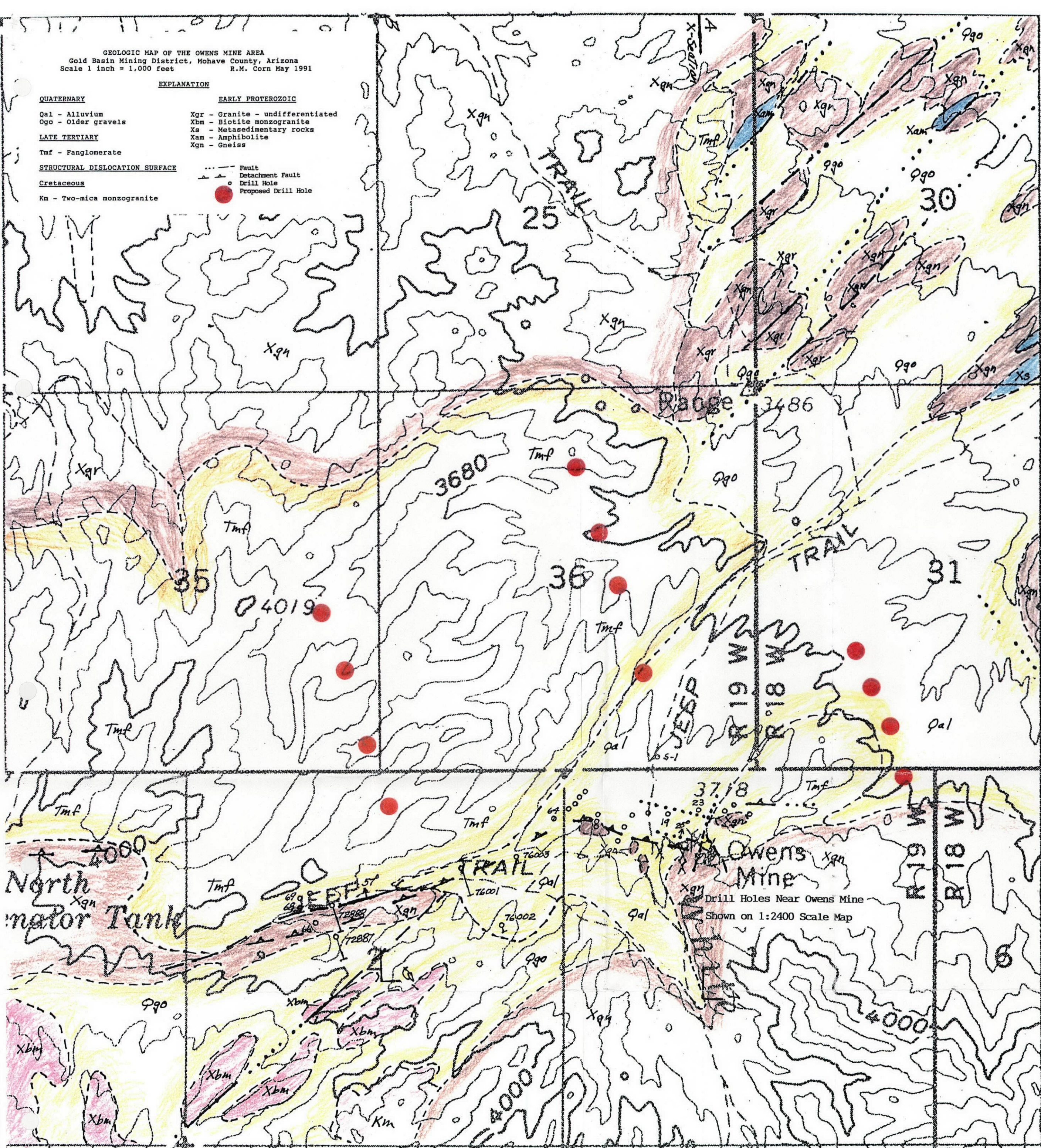
Cretaceous

Km - Two-mica monzogranite

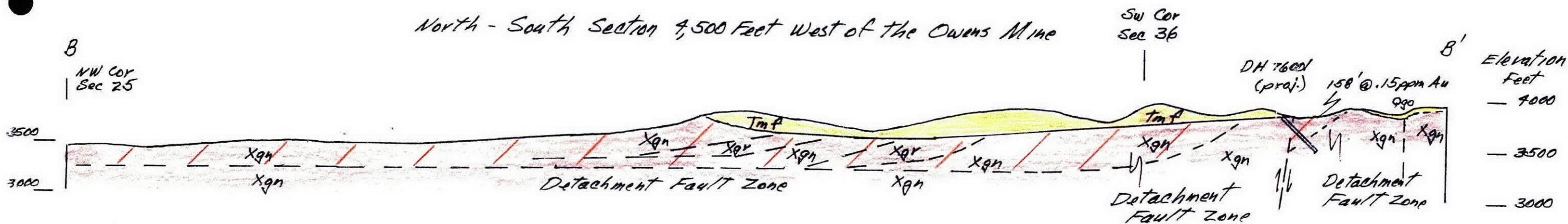
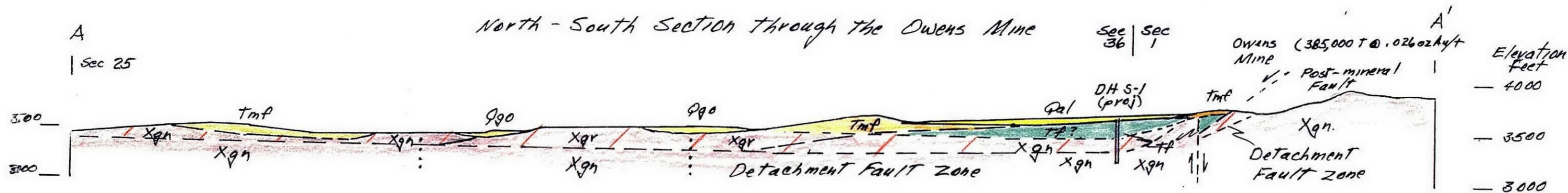
EARLY PROTEROZOIC

Xgr - Granite - undifferentiated
Xbm - Biotite monzogranite
Xs - Metasedimentary rocks
Xam - Amphibolite
Xgn - Gneiss

--- Fault
- - - Detachment Fault
o Drill Hole
● Proposed Drill Hole



North-South Sections Through The Owens Mine Area Gold Basin Mining District, Mohave County, Arizona

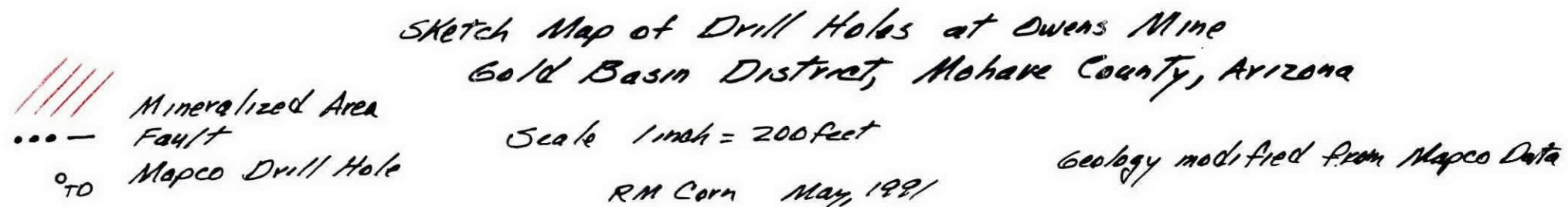


Scale 1 inch = 1,000 Feet
Horizontal = Vertical

Detachment Fault Zone / / /

RM Corn May, 1991

R19W
sec 36



RUSSELL M. CORN

Registered Geologist

8425 DESERT STEPPES DR.

TUCSON, ARIZONA 85710

PHONE 602 - 298-1770

James D. Sell
Manager, Southwestern Exploration
ASARCO, Inc.
P.O. Box 5747
Tucson, AZ 85703

May 8, 1991
Re: Geochemical Sample Results
Senator-South Senator Area
Gold Basin District
Mohave County, Arizona

Summary

The extensive hematitic-altered and stained Precambrian granite south of the Senator Mine does not exhibit anomalous introduced gold or associated trace elements. Chlorite-siderite altered granite and gneiss and shear zones with gold mineralization near the Senator Mine exhibit weakly anomalous mercury but no appreciable introduced arsenic or antimony. The sheared, siderite-altered Cretaceous granite in Section 16 that is part of a lower slice in the detachment fault zone contains anomalous gold values and deserves further evaluation.

General

Attached are sample logs tabulating analytical results for 31 geochemical samples taken in April, 1991 in conjunction with the examination of the broad area of limonitic and hematitic stained granite south of the Senator Mine. The samples include several character samples of mineralized granite and grab samples from Kennecott's drill holes in the SW $\frac{1}{4}$ of Section 14, south of the Senator Mine, samples of the weak chloritic and hematitic altered porphyritic granites, and of the underlying slice of siderite-altered Cretaceous granite in Section 16, T28N, R19W, south of Senator Mountain.

Results

Samples of crushed and weakly altered, sheared granite (6698-D and 6699-C) from the prospects in the SW $\frac{1}{4}$ of Section 14 contain interesting amounts of gold but the higher gold values are not associated with appreciable introduced mercury, arsenic or antimony. The Kennecott drill holes in the vicinity of the prospects encountered hematite-stained alaskitic-altered Cretaceous granite at depth, and results suggest that one of the drill holes may have intersected some gold mineralization. Samples of weak chlorite-siderite altered gneiss and granite to the south and west, where it is hematitic-altered and hematitic stained contained only .01 to .02 ppm mercury. None of the samples of hematitic-stained porphyritic granite or of clay-altered sheared zones within and above the granite contained anomalous gold.

Siderite-Altered, Alaskitic Cretaceous Granite

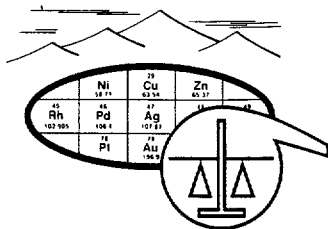
Four samples (6702 through 6702-C) were taken from exposures of the alaskitic-altered Cretaceous granite in Section 16 south of Senator Mountain. The granite is thoroughly shattered, cut by lamprophyre dikes and exhibits widespread siderite alteration. It appears to be a fault slice beneath the hematitic-altered Precambrian granite and may be in the lower part of the detachment fault zone. Three of the four samples, 6702, 6702-A and 6702-B, taken over a distance of approximately $\frac{1}{2}$ mile along a major wash in

the north $\frac{1}{2}$ of Section 16, contained prominently anomalous gold values, .11, .19 and .26 ppm gold, but did not contain associated introduced arsenic, antimony or mercury. The altered granite contains variable, minor amounts of pyrite and the highest gold value (.26 ppm) was from a sample of altered granite that had contained disseminated pyrite. The sheared and altered Cretaceous granite is the type of rock that could host extensive gold mineralization and further evaluation of this area may be worthwhile.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read 'Russell M. Corn', written over a horizontal line.

Russell M. Corn



SKYLINE LABS, INC.

1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 725
May 3, 1991
6698 TO 6706
PAGE 1 OF 2

ASARCO

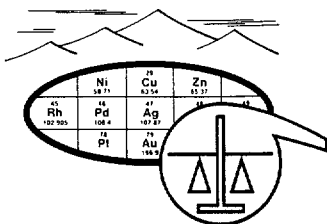
MAY 6 1991

SW Exploration

ASARCO INCORPORATED
Attn: Mr. Russell Corn
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

Analysis of 3 Drill Cutting and 28 Rock Chip Samples

FIRE ASSAY						
ITEM	SAMPLE NO.	Au* (ppm)	Ag (ppm)	As (ppm)	Sb (ppm)	Hg (ppm)
1	6698	.005	.20	1.7	.3	.11
2	6698-A	.010	.25	.6	1.8	.08
3	6698-B	<.005	.05	4.9	.9	.03
4	6698-C	.005	.15	1.0	.8	.08
5	6698-D	.840	.35	2.8	.9	.11
6	6699	.110	.20	3.4	.9	.06
7	6699-A	.025	.10	4.6	4.4	.19
8	6699-B	.010	.25	1.6	.5	.16
9	6699-C	1.100	.50	2.8	.8	.13
10	6700	.025	.15	1.2	.1	.06
11	6700-A	.030	<.05	4.4	.2	.02
12	6700-B	.220	7.00	22.0	3.7	.33
13	6701	.005	.10	4.0	.3	.07
14	6701-A	.005	.05	1.6	.2	.02
15	6701-B	.005	.10	36.0	.6	.03
16	6701-C	.005	<.05	3.2	.2	.03
17	6701-D	.005	<.05	6.0	.7	.01
18	6702	.110	.10	.8	.2	.01
19	6702-A	.190	.05	.6	.1	.02
20	6702-B	.260	.10	1.0	.1	.02
21	6702-C	.010	.25	.6	.2	.02
22	6703	.010	.40	.8	.1	.02
23	6703-A	.010	.50	4.6	.3	.01
24	6703-B	.005	.30	6.0	.7	.02
25	6704	.010	.40	55.0	.2	.01



SKYLINE LABS, INC.

1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 725

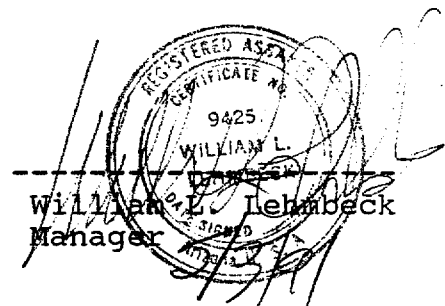
May 3, 1991

PAGE 2 OF 2

FIRE ASSAY						
ITEM	SAMPLE NO.	Au* (ppm)	Ag (ppm)	As (ppm)	Sb (ppm)	Hg (ppm)
26	6704-A	.005	.15	8.5	<.1	.01
27	6704-B	.005	.25	7.0	.1	.02
28	6704-C	.005	.10	3.8	.2	.01
29	6705	.005	.15	.8	<.1	<.01
30	6705-A	.005	.30	7.0	.6	.01
31	6706	.005	.20	4.0	.2	.05

*NOTE: Method of analysis by combination
fire assay and atomic absorption.

cc: Mr. J. D. Sell



PROSPECT Gold Basin
COUNTY Mohave STATE Arizona

SAMPLE LOG

April, 1991

PAGE 1 OF 3

SAMPLE NUMBER	LOCATION		DESCRIPTION	RADIOACTIVE ELEMENTS			PATHFINDER ELEMENTS							BASE METALS				SULFO-SALTS		PRECIOUS METALS		
	LEGAL	GEOGRAPHIC	LITHOLOGY AND MINERALIZATION	U ₃ O ₈	eU	eTh				W	Acid Sol Ba	Total Ba %	F	Hg	Cu	Mo	Pb	Zn	As	Sb	Au	Ag
6698	NW 1/4 23 T 28N, R 19W	Road cut on Top of ridge	coarse porphyritic bio granite weak siderite-chlorite alt.											.11					1.7	.3	.005	.20
6698-A	North edge NW 23 "	South Slope at Hill	chlorite-siderite altered shattered for basic gneiss											.08					.6	1.8	.010	.25
6698-B	SW cor NW 1/4 22 T 28N, R 19W	Area of red Hills	coarse porphyritic biotite granite hematite stained - minor spess											.03					4.9	.9	.005	.05
6698-C	SW 1/4 14 T 28N, R 19W	Dump at covered cut NW 1/4 south of hill	chlorite-sid alt fine-gr gneiss											.08					1.0	.8	.005	.15
6698-D	"	"	coarse por. biotite granite wk chlorite-sid alt.											.11					2.8	.9	.84	.35
6699	"	Drill Hole end of road	Cuttings include hemat. stained gessite or granite											.06					3.4	.9	.11	.20
6699-A	"	Drill Hole above shaft	" "											.19					4.6	4.4	.025	.10
6699-B	"	Drill hole at end south road	" " hole on S side mineralized zone											.16					1.6	.5	.01	.25
6699-C	"	covered adit east of shaft	3 ft from limonite st. creek in shear zone at mouth adit											.13					2.8	.8	1.10	.50
6700	NE 1/4 25 T 28N, R 19W	South Trench East Fry shaft	Sequest at 1-2" white clay vlt's bordered by limonite											.06					1.2	.10	.025	.15
6700-A	NW 1/4 17 T 29N, R 18W	West Gold Hill fragments on N side of gulch.	Metagranite cut by hematite low L gte-sid vlt's.											.02					4.4	.2	.03	.05
6700-B		CA A	Standard											.33					22	3.7	.22	7.0

1. VALUES IN PPM EXCEPT "TOTAL BARIUM" WHICH IS IN %.

PROSPECT Gold Basin
COUNTY Mohave STATE AZ

SAMPLE LOG

April, 1991

PAGE 2 OF 3

SAMPLE NUMBER	LOCATION		DESCRIPTION	RADIOACTIVE ELEMENTS			PATHFINDER ELEMENTS							BASE METALS				SULFO-SALTS		PRECIOUS METALS	
	LEGAL	GEOGRAPHIC	LITHOLOGY AND MINERALIZATION	U ₃ O ₈	eU	eTh			W	Acid Sol Bo	Total Ba %	F	Hg	Cu	Mo	Pb	Zn	As	Sb	Au	Ag
6701	NE/NE 16 T28N, R19W	Wash at West end of Hills	10 ft sample of detach. Bx granite & glass w/ hem. limonite										.07					4.0	.3	.005	.10
6701-A	NE/SE 16 T28N, R19W	S bank wash E. of Windmill	3 ft sample of detach. Bx dense granite cobbles - some hematite										.02					1.6	.2	.005	.05
6701-B	NW/NW 16 "	S slope hill NW edge of glass	red hematite seams in sheared granite & red mud Bx like										.03					36.0	.6	.005	.10
6701-C	NE/NW 16 "	W slope hill	cemented red Bx above sheared red granite & alaskite										.03					3.2	.2	.005	.05
6701-D	SW/SE 16 "	S bank of small wash	sheared red hematite granite										.01					6.0	.7	.005	.05
6702	Cent/NE 16 T28N, R19W	Major wash 300' W of det. Bx	sheared alaskite - siderite chlorite alteration										.01					.8	.2	.11	.10
6702-A	NE/NW 16 "	Major wash 100' lower elevation	sheared alaskite ch. - sid. alt. some seams, quartz										.02					.6	.1	.19	.05
6702-B	"	"	35 ft zone of pyritic altered alaskite										.02					1.0	.1	.26	.10
6702-C	NE/SW 16 "	Wash W of windmill	sheared alaskite - sid. alt. Near SE contact of red granite										.02					.6	.2	.01	.25
6703	Cent/SE 26 "	Fluorite pit	Fresh, appearing coarse feldspathic granite										.02					.8	.1	.9	.40
6703-A	"	"	Trench above pit										.01					4.6	.3	.01	.50
6703-B	NE/NE 35 "	S side hill S of fence line	1-2' zone of pink alt'd granite w/ thin chlorite pits & some hematite limonite										.02					6.0	.7	.005	.30

1. VALUES IN PPM EXCEPT "TOTAL BARIUM" WHICH IS IN %.

PROSPECT Gold Basin
COUNTY Mohave STATE AZ

SAMPLE LOG

April 1991

PAGE 3 OF 3

SAMPLE NUMBER	LOCATION		DESCRIPTION	RADIOACTIVE ELEMENTS			PATHFINDER ELEMENTS							BASE METALS					SULFO- SALTS		PRECIOUS METALS	
	LEGAL	GEOGRAPHIC	LITHOLOGY AND MINERALIZATION	U ₃ O ₈	eU	eTh			W	Acid Sol Ba	Total Ba %	F	Hg	Cu	Mo	Pb	Zn	As	Sb	Au	Ag	
6704	NW/NE 35 T28N, R19W	Small ridge W of wash & near section line	10-20' dirt shear - poor exp. for gneiss, horn-sil & clay										.01						55.0	.2	.010	.10
6704A	"	W side wash west of road	Disaggregated csc por granite clay & minor hematite limonite										.01						8.5	<.1	.005	.15
6704B	"	E bank of wash	10 ft blushed - clay & lim. fault zone on top of granite. clay & horn. limonite										.02						7.0	.1	.005	.25
6704C	SE/NE 35 "	Poor exp. near wash NW side of b.g. mt.	red, hematitic st. - csc porphyritic granite.										.01						3.8	.2	.005	.10
6705	NE/NW 35 T28N, R20W	N side big wash W side of 1/4 W of White Mt. mt.	Variable alt gneiss w/ quartz on fractures.										<.01						.8	<.1	.005	.15
6705A	SW/NE NW 9 T28N, R19W	South slope - base San. Mtn.	Brecciated gneiss gtz - sil - hematite										.01						7.0	.6	.005	.30
6706	SW/NE NW 24 T27N, R19W	E slope ridge S of section line	5' sample of lim. st crushed glass like abundant clays sample ~ 20' above contact with fault - poor exposure.										.05						4.0	.2	.005	.20

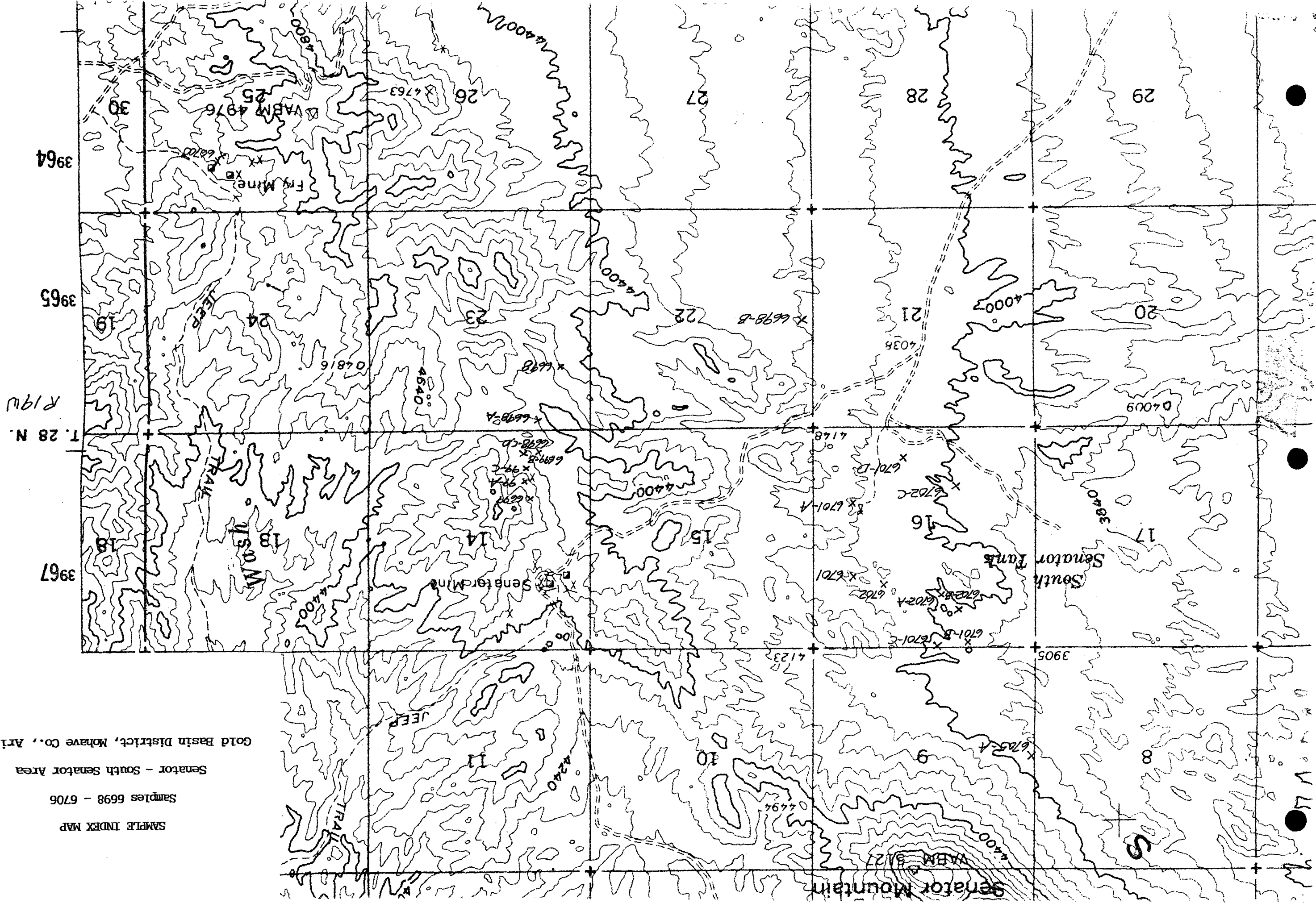
1. VALUES IN PPM EXCEPT "TOTAL BARIUM" WHICH IS IN %.

SAMPLE INDEX MAP

Samples 6698 - 6706

Senator - South Senator Area

Gold Basin District, Mohave Co., Arizona



SAMPLE INDEX MAP
Samples 6698 - 6706
Senator - South Senator Area
Gold Basin District, Mohave Co., Arizona

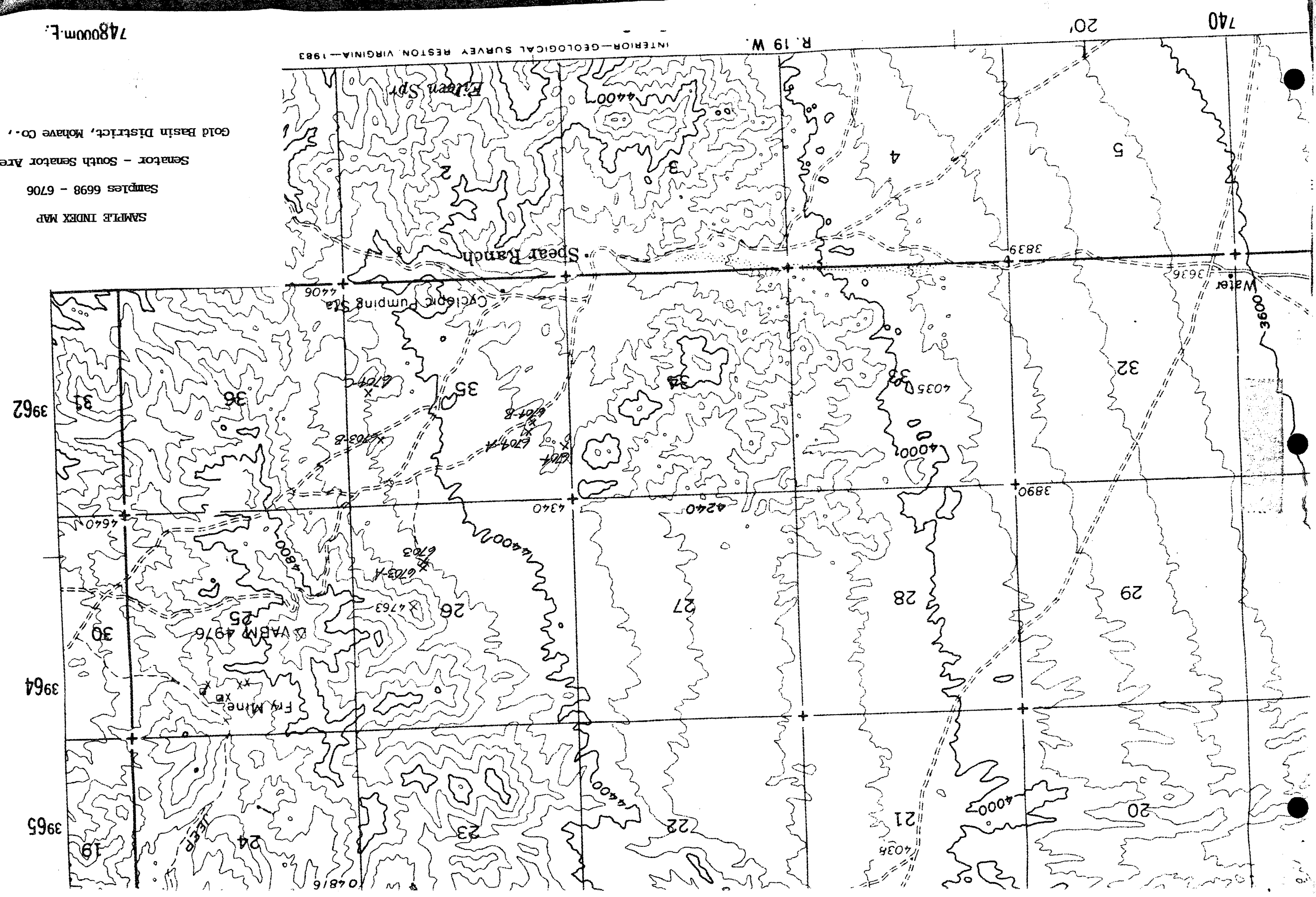
748000m.F.

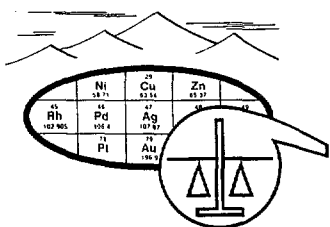
INTERIOR- GEOLOGICAL SURVEY RESTON VIRGINIA-1983

R. 19 W.

20'

740





SKYLINE LABS, INC.

1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOS
JOB NO. TAJ 725
May 3, 1991
6698 TO 6706
PAGE 1 OF 2

ASARCO Incorporated

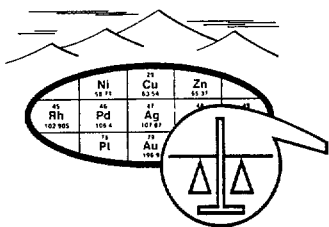
MAY 6 1991

ASARCO INCORPORATED
Attn: Mr. Russell Corn
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

SW Exploration

Analysis of 3 Drill Cutting and 28 Rock Chip Samples

FIRE ASSAY						
ITEM	SAMPLE NO.	Au* (ppm)	Ag (ppm)	As (ppm)	Sb (ppm)	Hg (ppm)
1	6698	.005	.20	1.7	.3	.11
2	6698-A	.010	.25	.6	1.8	.08
3	6698-B	<.005	.05	4.9	.9	.03
4	6698-C	.005	.15	1.0	.8	.08
<i>prop. pit</i> 5	6698-D	.840	.35	2.8	.9	.11
6	6699	.110	.20	3.4	.9	.06
7	6699-A	.025	.10	4.6	4.4	.19
8	6699-B	.010	.25	1.6	.5	.16
<i>prop. pit</i> 9	6699-C	1.100	.50	2.8	.8	.13
10	6700	.025	.15	1.2	.1	.06
11	6700-A	.030	<.05	4.4	.2	.02
12	6700-B	.220	7.00	22.0	3.7	.33
13	6701	.005	.10	4.0	.3	.07
14	6701-A	.005	.05	1.6	.2	.02
15	6701-B	.005	.10	36.0	.6	.03
16	6701-C	.005	<.05	3.2	.2	.03
17	6701-D	.005	<.05	6.0	.7	.01
18	6702	.110	.10	.8	.2	.01
<i>K- gr</i> 19	6702-A	.190	.05	.6	.1	.02
20	6702-B	.260	.10	1.0	.1	.02
21	6702-C	.010	.25	.6	.2	.02
22	6703	.010	.40	.8	.1	.02
23	6703-A	.010	.50	4.6	.3	.01
24	6703-B	.005	.30	6.0	.7	.02
25	6704	.010	.40	55.0	.2	.01



SKYLINE LABS, INC.

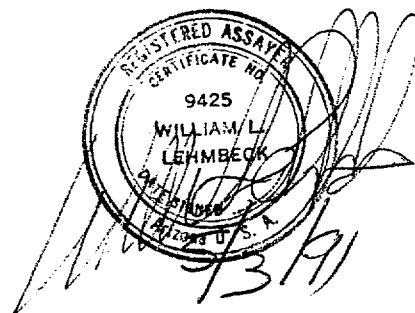
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Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 725
May 3, 1991
PAGE 2 OF 2

FIRE ASSAY						
ITEM	SAMPLE NO.	Au* (ppm)	Ag (ppm)	As (ppm)	Sb (ppm)	Hg (ppm)
26	6704-A	.005	.15	8.5	<.1	.01
27	6704-B	.005	.25	7.0	.1	.02
28	6704-C	.005	.10	3.8	.2	.01
29	6705	.005	.15	.8	<.1	<.01
30	6705-A	.005	.30	7.0	.6	.01
31	6706	.005	.20	4.0	.2	.05

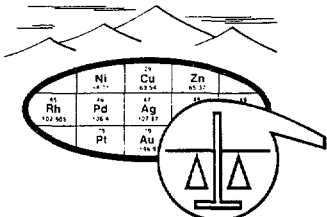
*NOTE: Method of analysis by combination
fire assay and atomic absorption.

cc: Mr. J. D. Sell



Original to City 7/6/71

JDS



SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

INVOICE
NET 30 DAYS

Job No. TAJ 725
May 3, 1991
6698 TO 6706

ASARCO INCORPORATED
Attn: Mr. James D. Sell
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

Analysis of 3 Drill Cutting and 28 Rock Chip Samples

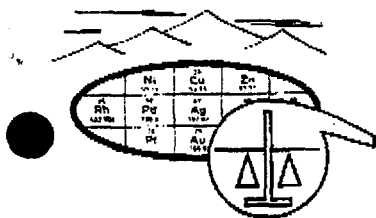
31 GREAT BASIN #4 @ \$14.50*.....	\$449.50
31 samples crushed, split and pulverized @ \$3.20	\$99.20
Totals	\$548.70

* Multi Element Discount

APPROVED FOR PAYMENT
By: W. L. Lehbeck
(Signature)
Gen. Exp.

ASARCO Incorporated
MAY 6 1991
SW Exploration

JDS



SKYLINE LABS, INC.

1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 725
April 25, 1991
6698 TO 6706
PAGE 1 OF 2

ASARCO INCORPORATED
Attn: Mr. Russell Corn
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

ASARCO Inc.,

APR 25 1991

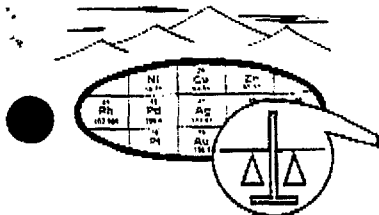
SW Exploration

Gold analysis of 3 Drill Cuttings and 28 Rock Chip Samples,
additional elements pending analysis.

FIRE ASSAY

ITEM	SAMPLE NO.	Au* (ppm)
------	------------	--------------

1	6698	.005
2	6698-A	.010
3	6698-B	<.005
4	6698-C	.005
5	6698-D	.840
6	6699	.110
7	6699-A	.025
8	6699-B	.010
9	6699-C	1.100
10	6700	.025
11	6700-A	.030
12	6700-B	.220
13	6701	.005
14	6701-A	.005
15	6701-B	.005
16	6701-C	.005
17	6701-D	.005
18	6702	.110
19	6702-A	.190
20	6702-B	.260
21	6702-C	.010
22	6703	.010
23	6703-A	.010
24	6703-B	.005
25	6704	.010



SKYLINE LABS, INC.

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APR 25 1991

SW. EXP. 100000

JOB NO. TAJ 725

April 25, 1991

PAGE 2 OF 2

FIRE ASSAY

ITEM	SAMPLE NO.	Au* (ppm)
26	6704-A	.005
27	6704-B	.005
28	6704-C	.005
29	6705	.005
30	6705-A	.005
31	6706	.005

*NOTE: Method of analysis by combination
fire assay and atomic absorption.

William L. Lehmbek
Manager

4/23/91

June 10, 1991

6/91 JDS

FILE NOTE

KCC Drill Holes
Sec. 14, T28N, R19W
Larsen Lease - Senator South
Gold Basin District
Mohave County, Arizona

In R.M. Corn's report of May 8, 1991 - Geochemical Sampling Results, Senator - South Senator Area - he mentions under "Results" that "The Kennecott drill holes suggest that one of the drill holes may have intercepted some gold mineralization."

In the material Corn left behind are the Kennecott drill holes/assays, with no other notation, but are undoubtedly the drill holes in the Senator South area of which he was referring.

Kennecott drilled six holes, which are tabulated in Table 1, and hole SS-2 intercepted the best values, with 5' of 0.079 opt Au found at 225'-230'. Only a few other individual intervals of +0.02 opt Au were reported in holes SS-2 and SS-3.

Table 1. Summary of Reported Values
KCC Senator South, Drill Holes

Hole Number	Number of 5' intervals having 10 ppb Au or above	Avg. of Intervals having 10 ppb Au or above. ppb value	Best 5' Interval ppb Au. ppb value	Total Depth Feet
SS-01	10	21	54	500
SS-02*	27	258	(0.079 opt)	365
Includes: * 140'-180' = 40' @ 230 ppb Au, * 215'-255' = 40' @ 682 ppb Au; , including 5' at 0.079 opt Au.				
SS-03	38	147	855	365
SS-04	13	40	260	500
SS-05	8	35	78	500
SS-06	9	20	44	400

JDS:mek

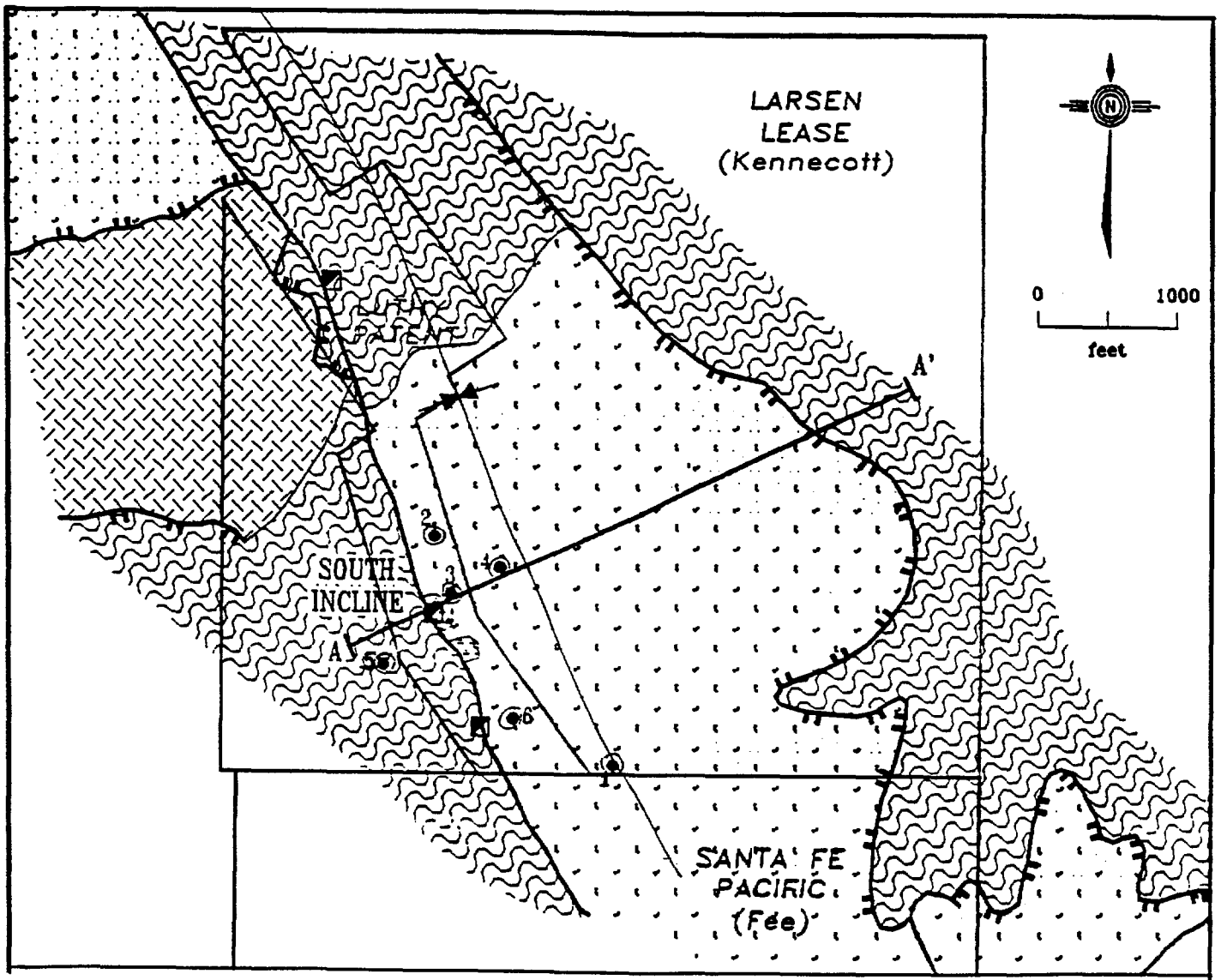
James D. Sell
James D. Sell

cc: W.L. Kurtz

ASARCO Incorporated

JUN 7 1991

SW Exploration



June 10, 1991

FILE NOTE

R.M. Corn's Report
Geochemical Sample Results
Senator-South Senator Area
Gold Basin District
Mohave County, Arizona

Ongoing evaluation of the Gold Basin district should utilize this report in conjunction with the detailed geologic maps (in press) of the area.

This visually altered and interesting unit of Cretaceous granite has only a few interesting gold values based on the sampling to date. The sampling is probably sufficient to suggest that no large area of gold-bearing granite is exposed.

The Cretaceous granite is believed to occupy a lower slice within the major detached zone and thus is covered elsewhere by upper slice units and overlying cover rocks.

Consideration must be given to the timing of shears and the introduction of precious metal values and the low-angle movement which may have moved the mineralization zones from their original root-zone feeders.

JDS:mek


James D. Sell

cc: W.L. Kurtz

FILE

RUSSELL M. CORN

Registered Geologist

8425 DESERT STEPPES DR.

TUCSON, ARIZONA 85710

PHONE 602 - 298-1770

James D. Sell
Manager, Southwestern Exploration
ASARCO, Inc.
P.O. Box 5747
Tucson, AZ 85703

May 8, 1991

Re: Geochemical Sample Results
Senator-South Senator Area
Gold Basin District
Mohave County, Arizona

Summary

The extensive hematitic-altered and stained Precambrian granite south of the Senator Mine does not exhibit anomalous introduced gold or associated trace elements. Chlorite-siderite altered granite and gneiss and shear zones with gold mineralization near the Senator Mine exhibit weakly anomalous mercury but no appreciable introduced arsenic or antimony. The sheared, siderite-altered Cretaceous granite in Section 16 that is part of a lower slice in the detachment fault zone contains anomalous gold values and deserves further evaluation.

General

Attached are sample logs tabulating analytical results for 31 geochemical samples taken in April, 1991 in conjunction with the examination of the broad area of limonitic and hematitic stained granite south of the Senator Mine. The samples include several character samples of mineralized granite and grab samples from Kennecott's drill holes in the SW $\frac{1}{4}$ of Section 14, south of the Senator Mine, samples of the weak chloritic and hematitic altered porphyritic granites, and of the underlying slice of siderite-altered Cretaceous granite in Section 16, T28N, R19W, south of Senator Mountain.

Results

Samples of crushed and weakly altered, sheared granite (6698-D and 6699-C) from the prospects in the SW $\frac{1}{4}$ of Section 14 contain interesting amounts of gold but the higher gold values are not associated with appreciable introduced mercury, arsenic or antimony. The Kennecott drill holes in the vicinity of the prospects encountered hematite-stained alaskitic-altered Cretaceous granite at depth, and results suggest that one of the drill holes may have intersected some gold mineralization. Samples of weak chlorite-siderite altered gneiss and granite to the south and west, where it is hematitic-altered and hematitic stained contained only .01 to .02 ppm mercury. None of the samples of hematitic-stained porphyritic granite or of clay-altered sheared zones within and above the granite contained anomalous gold.

Siderite-Altered, Alaskitic Cretaceous Granite

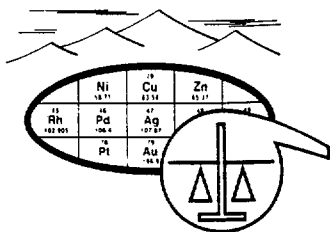
Four samples (6702 through 6702-C) were taken from exposures of the alaskitic-altered Cretaceous granite in Section 16 south of Senator Mountain. The granite is thoroughly shattered, cut by lamprophyre dikes and exhibits widespread siderite alteration. It appears to be a fault slice beneath the hematitic-altered Precambrian granite and may be in the lower part of the detachment fault zone. Three of the four samples, 6702, 6702-A and 6702-B, taken over a distance of approximately $\frac{1}{2}$ mile along a major wash in

the north $\frac{1}{2}$ of Section 16, contained prominently anomalous gold values, .11, .19 and .26 ppm gold, but did not contain associated introduced arsenic, antimony or mercury. The altered granite contains variable, minor amounts of pyrite and the highest gold value (.26 ppm) was from a sample of altered granite that had contained disseminated pyrite. The sheared and altered Cretaceous granite is the type of rock that could host extensive gold mineralization and further evaluation of this area may be worthwhile.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read 'Russell M. Corn', written over a horizontal line.

Russell M. Corn



SKYLINE LABS, INC.

1775 W. Sahuaro Dr. • P.O. Box 50106

Tucson, Arizona 85703

(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 725

May 3, 1991

6698 TO 6706

PAGE 1 OF 2

ASARCO

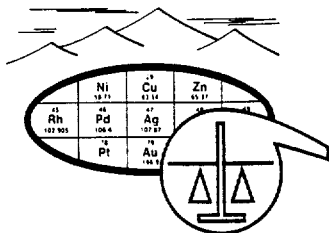
MAY 6 1991

ASARCO INCORPORATED
Attn: Mr. Russell Corn
Southwestern Exploration
P.O. Box 5747
Tucson, AZ 85703

SW Exploration

Analysis of 3 Drill Cutting and 28 Rock Chip Samples

FIRE ASSAY						
ITEM	SAMPLE NO.	Au* (ppm)	Ag (ppm)	As (ppm)	Sb (ppm)	Hg (ppm)
1	6698	.005	.20	1.7	.3	.11
2	6698-A	.010	.25	.6	1.8	.08
3	6698-B	<.005	.05	4.9	.9	.03
4	6698-C	.005	.15	1.0	.8	.08
5	6698-D	.840	.35	2.8	.9	.11
6	6699	.110	.20	3.4	.9	.06
7	6699-A	.025	.10	4.6	4.4	.19
8	6699-B	.010	.25	1.6	.5	.16
9	6699-C	1.100	.50	2.8	.8	.13
10	6700	.025	.15	1.2	.1	.06
11	6700-A	.030	<.05	4.4	.2	.02
12	6700-B	.220	7.00	22.0	3.7	.33
13	6701	.005	.10	4.0	.3	.07
14	6701-A	.005	.05	1.6	.2	.02
15	6701-B	.005	.10	36.0	.6	.03
16	6701-C	.005	<.05	3.2	.2	.03
17	6701-D	.005	<.05	6.0	.7	.01
18	6702	.110	.10	.8	.2	.01
19	6702-A	.190	.05	.6	.1	.02
20	6702-B	.260	.10	1.0	.1	.02
21	6702-C	.010	.25	.6	.2	.02
22	6703	.010	.40	.8	.1	.02
23	6703-A	.010	.50	4.6	.3	.01
24	6703-B	.005	.30	6.0	.7	.02
25	6704	.010	.40	55.0	.2	.01



SKYLINE LABS, INC.

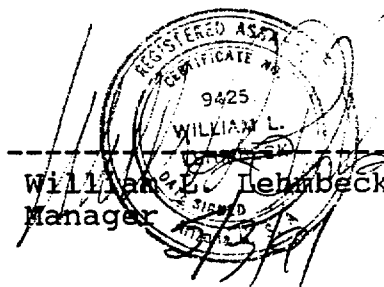
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Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 725
May 3, 1991
PAGE 2 OF 2

FIRE ASSAY						
ITEM	SAMPLE NO.	Au* (ppm)	Ag (ppm)	As (ppm)	Sb (ppm)	Hg (ppm)
26	6704-A	.005	.15	8.5	<.1	.01
27	6704-B	.005	.25	7.0	.1	.02
28	6704-C	.005	.10	3.8	.2	.01
29	6705	.005	.15	.8	<.1	<.01
30	6705-A	.005	.30	7.0	.6	.01
31	6706	.005	.20	4.0	.2	.05

*NOTE: Method of analysis by combination
fire assay and atomic absorption.

cc: Mr. J. D. Sell



PROSPECT Gold Basin
COUNTY Mohave STATE Arizona

SAMPLE LOG

April, 1991

PAGE 1 OF 3

SAMPLE NUMBER	LOCATION		DESCRIPTION	RADIOACTIVE ELEMENTS			PATHFINDER ELEMENTS							BASE METALS				SULFO- SALTS		PRECIOUS METALS		
	LEGAL	GEOGRAPHIC	LITHOLOGY AND MINERALIZATION	U ₃ O ₈	eU	eTh				W	Acid Sol Ba	Total Ba %	F	Hg	Cu	Mo	Pb	Zn	As	Sb	Au	Ag
6698	NW/NE 23 T 28N, R 19W	Road cut on Top at ridge	coarse porphyritic bio granite weak siderite-chlorite alt.											.11					1.7	.3	.005	.20
6698-A	North edge NW 23 "	South Slope at Hill	chlorite-siderite altered shattered for basic gneiss											.08					.6	1.8	.010	.25
6698-B	SW cor NW 23 T 28N, R 19W	Area of red Hills	coarse porphyritic biotite granite limonite stained - minor gneiss											.03					4.9	.9	<.005	.05
6698-C	SW/SE 17 T 28N, R 19W	Dump at covered cut N of KL south DH.	chlorite-sid alt fine-gr gneiss											.08					1.0	.8	.005	.15
6698-D	"	"	coarse por. biotite granite w/ chlorite-sid alt.											.11					2.8	.9	.84	.35
6699	"	Drill Hole end of road	Cuttings include hem. stained plagioclase or granite											.06					3.4	.9	.11	.20
6699-A	"	Drill Hole above shaft	" "											.19					4.6	4.4	.005	.10
6699-B	"	Drill hole at end south road	" " hole on S side mineralized zone											.16					1.6	.5	.01	.25
6699-C	"	Covered adit east of shaft	3 ft from limonite St. Creek in shear zone at mouth adit											.13					2.8	.8	1.10	.50
6700	NE/NE 23 T 28N, R 19W	South Trench East Fry shaft	Select at 1-2" white clay vlt's bordered by limonite											.06					1.2	.10	.005	.15
6700-A	NW/NE 17 T 29N, R 18W	West. Gold Hill fragments on N side of gulch.	Metagranite cut by thin low L gta-sid vlt's.											.02					4.4	.2	.03	<.05
6700-B		CA A	Standard											.33					22	3.7	.22	7.0

1. VALUES IN PPM EXCEPT "TOTAL BARIUM" WHICH IS IN %.

PROSPECT Gold Basin
COUNTY Mohave STATE AZ

SAMPLE LOG

April, 1991

PAGE 2 OF 3

SAMPLE NUMBER	LOCATION		DESCRIPTION	RADIOACTIVE ELEMENTS			PATHFINDER ELEMENTS							BASE METALS				SULFO-SALTS		PRECIOUS METALS	
	LEGAL	GEOGRAPHIC	LITHOLOGY AND MINERALIZATION	U ₃ O ₈	eU	eTh			W	Acid Sol Ba	Total Ba %	F	Hg	Cu	Mo	Pb	Zn	As	Sb	Au	Ag
6701	NE/NE 16 T28N, R19W	Wash at West end of Hills	10 ft sample of Getach Bx granite & glass w/ hem. limonite										.07					4.0	.3	.005	.10
6701-A	NE/SE 16 T28N, R19W	S bank wash E. of Windmill	3 ft sample of Getach Bx dense granite cobbles - some hematite										.02					1.6	.2	.005	.05
6701-B	NW/NW 16 "	S slope hill NW edge of glass	red hematite seams in sheared granite & red mud Bx dikes										.03					36.0	.6	.005	.10
6701-C	NE/NW 16 "	W slope Hill	cemented red Bx above sheared red granite & alaskite										.03					32	.2	.005	<.05
6701-D	SW/SE 16 "	S bank of small wash	sheared red hematitic granite										.01					6.0	.7	.005	<.05
6702	Cent/NE 16 T28N, R19W	Major wash 300' West of Bx	Sheared alaskite - siderite chlorite alteration										.01					.8	.2	.11	.10
6702-A	NE/NW 16 "	Major wash NW corner of Bx	Sheared alaskite chert - sid alt. some seams, quartz										.02					.6	.1	.19	.05
6702-B	" "	" "	35 ft zone of pyritic altered alaskite										.02					1.0	.1	.26	.10
6702-C	NE/SW 16 "	Wash W of Windmill	Sheared alaskite - sid. alt. Near SE contact w/ red granite										.02					.6	.2	.01	.25
6703	Cent/SE 26 "	Fluorite pit	Fresh, unaltered coarse porphyritic granite										.02					.8	.1	.01	.40
6703-A	" "	Trench above pit	3' sample of low shear between andesite & granite same hematite limonite & clays										.01					4.6	.3	.01	.50
6703-B	NE/NE 35 "	S side Hill S of Fluor line	1-2' zone of w/ altd granite w/ thin chert and quartz & some hematite limonite										.02					6.0	.7	.005	.30

1. VALUES IN PPM EXCEPT "TOTAL BARIUM" WHICH IS IN %.

PROSPECT Gold Basin
COUNTY Mohave STATE AZ

SAMPLE LOG

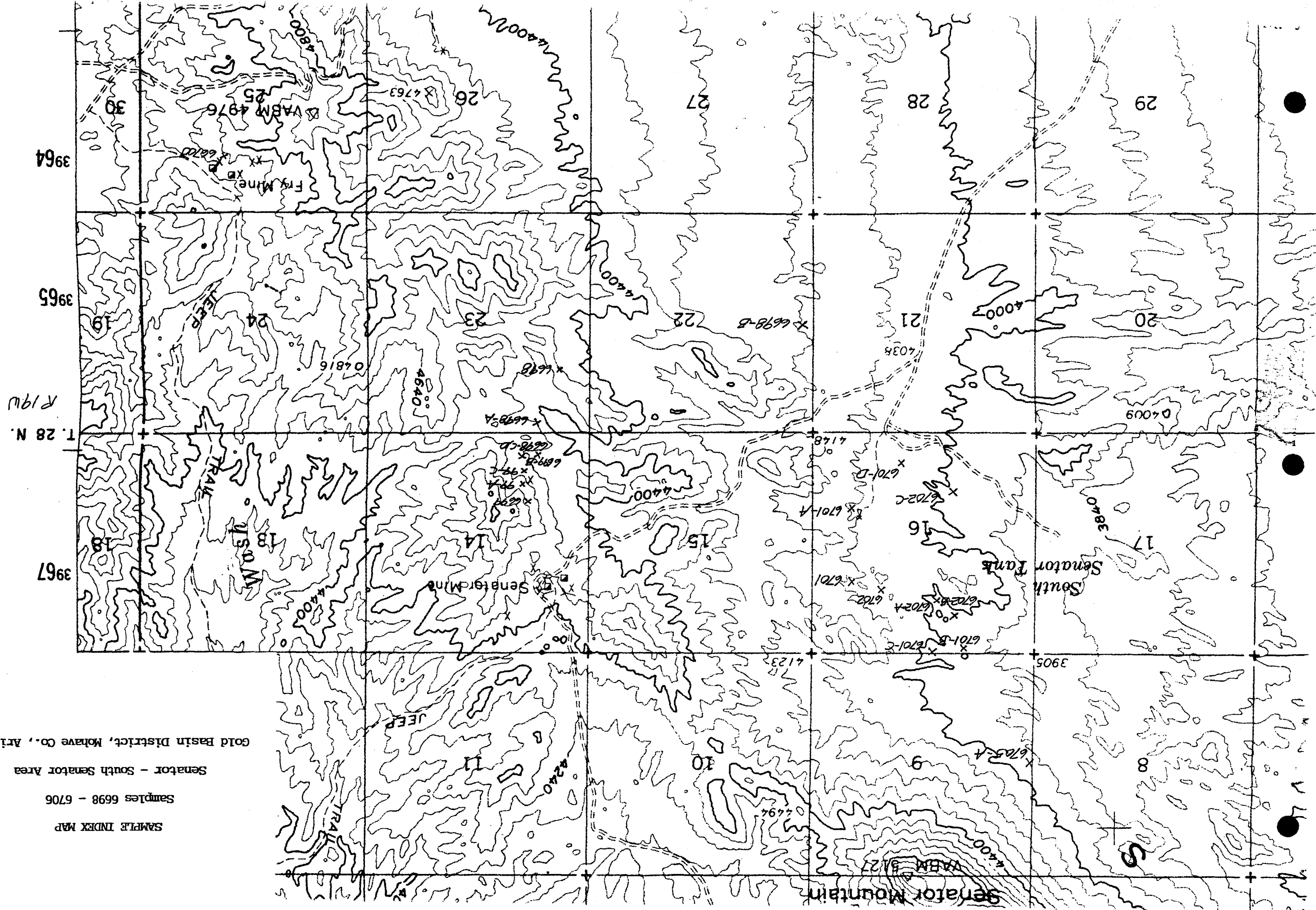
April 1991

PAGE 3 OF 3

SAMPLE NUMBER	LOCATION		DESCRIPTION	RADIOACTIVE ELEMENTS			PATHFINDER ELEMENTS							BASE METALS				SULFO- SALTS		PRECIOUS METALS	
	LEGAL	GEOGRAPHIC	LITHOLOGY AND MINERALIZATION	U ₃ O ₈	eU	eTh			W	AcidSol Ba	Total Ba %	F	Hg	Cu	Mo	Pb	Zn	As	Sb	Au	Ag
6704	NW/NE 35 T28N, R19W	Small ridge W of wash & near section line	10-20' vert shear - poor exp. for gneiss, horn-sil & clay										.01					550	.2	.010	.10
6704A	"	W side wash west of road	Disaggregated cse por granite clay & minor hematite limonite										.01					85	<.1	.005	.15
6704B	"	E bank of wash	10 ft blanket - clay & 1 ft fault zone on top of granite. clay & horn. limonite										.02					70	.1	.005	.25
6704C	SE/NE 35 "	Por exp. near wash NW side of big hill	red, hematitic st. - cse porphyritic granite.										.01					3.8	.2	.005	.10
6705	NE/NW 35 T28N, R20W	N side big wash W edge of 1/4 W of White Hats rd.	Variable alt gneiss w/ quartz on fractures.										<.01					.8	<.1	.005	.15
6705A	SW cor NW 9 T28N, R19W	South slope - base San. Mtn.	Brecciated gneiss gtz - sil - hematite										.01					70	.6	.005	.30
6706	SW cor NW 24 T28N, R19W	E slope ridge S of section line	5' sample of lim. st crushed glass like abundant clays sample ~ 20' above contact with Tuff - Por exposure.										.05					40	.2	.005	.20

1. VALUES IN PPM EXCEPT "TOTAL BARIUM" WHICH IS IN %.

SAMPLE INDEX MAP



740

20'

R. 19 W.

INTERIOR-GEOLOGICAL SURVEY RESTON VIRGINIA-1983

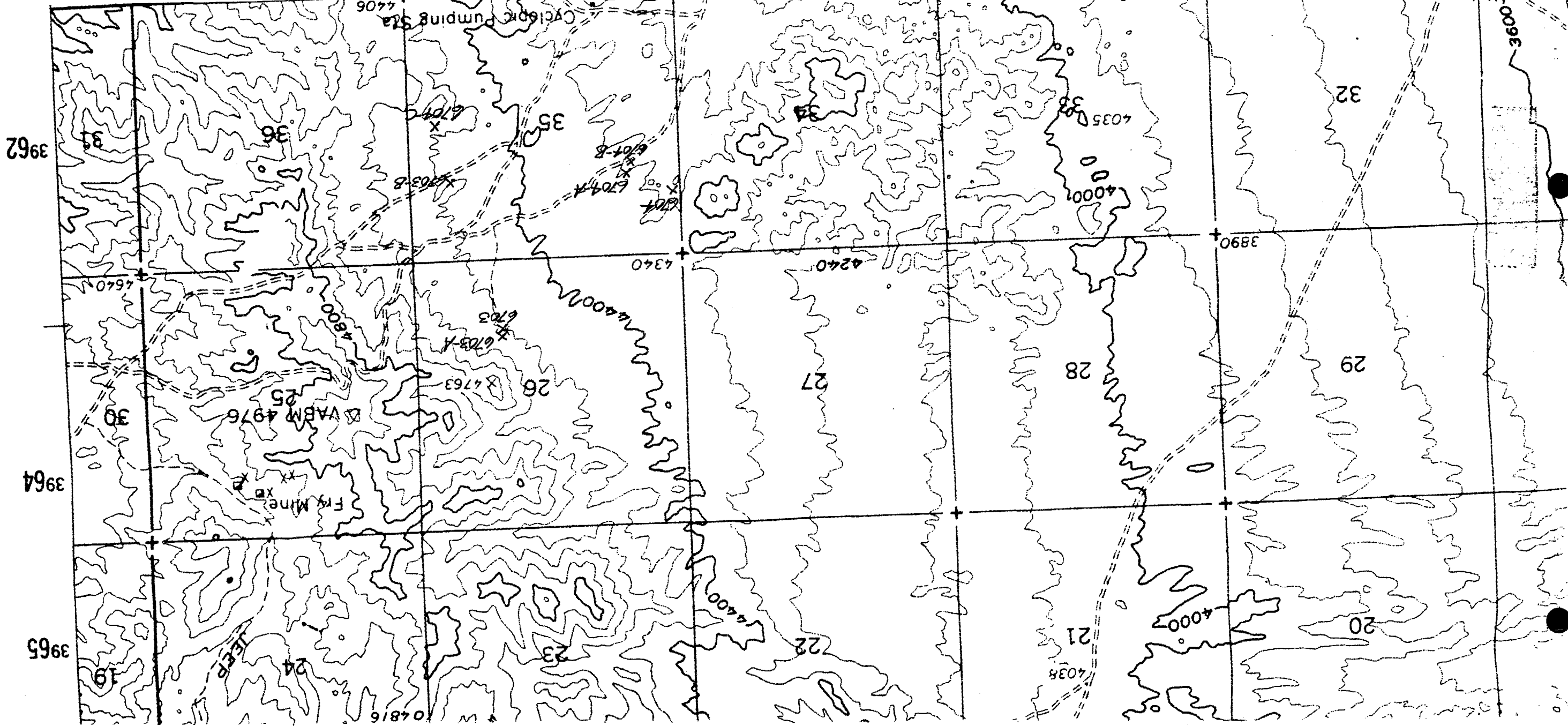
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Gold Basin District, Mohave Co., Arizona

Senator - South Senator Area

Samples 6698 - 6706

SAMPLE INDEX MAP



July 16, 1991

FILE NOTE

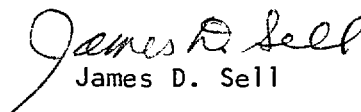
Corn & Ahern Data
1983 Geochemical Data
Gold Basin District
Mohave County, AZ

I send to the files, a copy of the 1983 Geochemical Data collected by Corn and Ahern.

As noted, gold mineralization is associated with mercury, arsenic, lead, and tungsten values.

However, the 600 foot by 1000 to 1500 foot spacing was too wide to define the narrow mineralized zones.

JDS:mek
Att.


James D. Sell

cc: W.L. Kurtz (w/o att.)

RUSSELL M. CORN
Registered Geologist
8425 DESERT STEPPES DR.
TUCSON, ARIZONA 85710
PHONE 602 - 298-1770

March 20, 1991

James D. Sell
Manager, Southwestern Exploration
ASARCO, Inc.
P.O. Box 5747
Tucson, AZ 85703


Re: 1983 Geochemical Data
Gold Basin District
Mohave Co., AZ

The attached copy of a 1983 report by Corn & Ahern, titled "Geological and Geochemical Investigations at Gold Basin", includes a compilation of geochemical samples taken in 1981 and 1982 in the Gold Basin district. The sample data includes samples from dumps and prospects, several selected traverses, and a widely-spaced sample grid with samples taken at claim corners on a 600 foot by 1,500 foot spacing. Analysis were carried out at the U.S. Borax Research Center, Anaheim, California by personnel who had not been involved in trace element analysis previously and results for certain elements should be interpreted with caution. Gold was determined by Fire Assay - AA finish, checked against standard samples, and the results are believed valid. Silver values of 1 to 1.5 ppm and lower are equivalent to a real value of less than .1 ppm silver and this threshold value should be subtracted from higher values. Base metal and tungsten results are believed correct and mercury results are believed reliable. The arsenic results are low and only partly reliable and the antimony values reported are not correct.

The samples are described and plotted with respect to their position in the three lithotectonic units in the area and samples taken from the middle plate unit of more intensely sheared and altered rocks exhibit prominent anomalies and generally higher trace element values than samples from either the upper plate or lower plate units. The results of the geochemical investigations indicate that:

1. Gold mineralization is associated with introduced mercury, arsenic, lead and tungsten.
2. The known zones of gold mineralization at the Cyclopic, Fry, Red Cloud and Senator prospects are reflected by a broad halo of weakly anomalous gold and associated trace elements.
3. The data suggests the presence of concealed mineralization near Butcher Camp, approximately 2½ miles south of the Cyclopic Mine, and in additional mineralized zones that have not been tested by drilling near the Red Cloud and Cyclopic prospects.
4. The 600 foot sample spacing was too wide to define the relatively narrow mineralized zones in the area.

Respectfully submitted,


Russell M. Corn

GEOLOGICAL AND GEOCHEMICAL
INVESTIGATIONS
AT GOLD BASIN
MOHAVE COUNTY, ARIZONA

Corn & Ahern

June 1983

GEOLOGIC AND GEOCHEMICAL INVESTIGATIONS

AT GOLD BASIN

MOHAVE COUNTY, ARIZONA

SUMMARY

Gold occurs at Gold Basin as widespread diffuse epigenetic mineralization localized in an extensive, sub-horizontal zone of crushing and shearing. The mineralized "Crushed Zone" is a 50 to 100-foot thick zone of gouge, breccia and crushed rock that resulted from coalescing listric faults at the base of a lithotectonic unit composed of sheared and shattered rocks. This Middle Plate unit is positioned between an overlying Upper Plate post-mineral lithotectonic unit and a stable underlying basement complex. In the vicinity of the Cyclopic Mine, the "Crushed Zone" contains .05 to .20 ounces of gold per ton associated with minor introduced pyrite and anomalous fluorine, tungsten and lead.

Detailed investigations have outlined an elongate zone of pyritic alteration and prominently anomalous gold and mercury values in exposures of Middle Plate rocks above the "Crushed Zone," which should be a reflection of more intense gold mineralization in the "Crushed Zone" below. The altered and mineralized Middle Plate rocks including the underlying "Crushed Zone," extend beneath a thin cover of post mineral rocks and exhibit a favorable exploration potential for a tabular, sub-horizontal, bulk-tonnage gold deposit analogous to Goldfield Corporations' recent discovery in a gently dipping shear zone in the Mesquite district of southern California. The Gold Basin exploration target is located primarily on claims staked by PCMI but does extend on to acreage held by the Santa Fe Railroad. The initial drilling program proposed to test the concept of extensive gold mineralization in the sub-horizontal crushed zone would cost approximately \$30,000. It would consist of leasing 80 acres from the Santa Fe Railroad and drilling a series of shallow 200 to 400-foot drill holes designed to test the exploration concept and the potential of the mineralized crushed zone in the vicinity of the zone of pyritic alteration and anomalous gold.

GENERAL

The exploration potential of the mineralized "Crushed Zone" at Gold Basin, and the general geology of the district were described in a previous report dated December, 1981. The results of detailed geologic mapping and geochemical investigations in the central part of the Gold Basin District are presented in this report as well as proposed initial drilling to test the exploration target indicated by this work. Results of the investigations are shown on the accompanying maps and

R 20 W

R 19 W

R 18 W

R 17 W

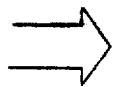
LAKE MEAD NATIONAL
RECREATION AREA

T 29 N

T 28 N

T 27 N

T 26 N

GOLD BASIN
SPECIFIC PROSPECT
AREA

Senator

Fry

Cyclopic

Gold Basin
Crushed
Zone

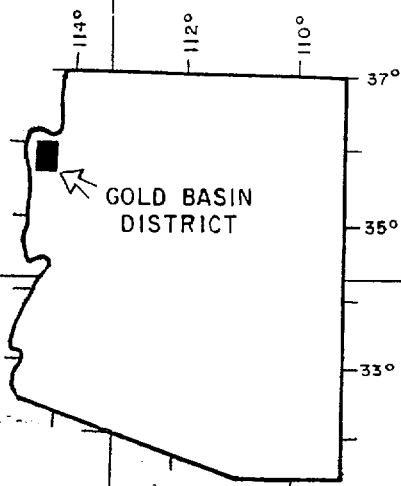
FIGURE 1

LOCATION MAP

GOLD BASIN DISTRICT
MOHAVE COUNTY, ARIZONA

1:250 000

Base from Kingman 1:250 000 sheet

GOLD BASIN
DISTRICT

KINGMAN 15 Miles

sections. Detailed geologic and geochemical data, including the analytical results for geochemical samples and screen test data are tabulated in the appendix.

The geologic mapping and sampling was carried out between November, 1982, and April, 1983, and the work was concentrated on and near PCMI's GB claim group. PCMI's 89 GB claims were staked in 1981 on open public domain adjacent to the Cyclopic mine and are interspersed between sections held by the Santa Fe Railroad. The current land situation and the position of PCMI's claims and other unpatented claims are illustrated on the accompanying land map, Plate IV.

LAND

Mineral ownership in the Gold Basin District is shown on Plate IV and consists of alternate sections of public domain and Santa Fe Railroad land. Major claim blocks in the area include the 32 claim Cyclopic group owned by Wyman and King, PCMI's adjacent GB claim group of 89 claims, Fortress Mining Company's Suzie group of 34 claims, and placer claims held by Santa Fe Mining.

No drilling or substantive physical exploration has been conducted in the area during the past two years. The 1982 assessment work on the Cyclopic claim group consisted of geochemical sampling and road maintenance. The work was performed by Elden Lee, Denver, Colorado, who currently operates as the Cerbat Claims Acquisition Company, but there are no records indicating that he has optioned or leased the Cyclopic property. Fortress Mining Company from Battle Mountain, Nevada staked the Suzie claims in February, 1983.

GEOLOGY

The complex sequence of Precambrian metamorphic and intrusive rocks, Laramide intrusive rocks and Tertiary intrusive, volcanic, and sedimentary rocks known at Gold Basin is summarized in Table I. Middle Tertiary orogenic activity in the area culminated in the emplacement of shallow stocks and batholiths, intense listric and low-angle faulting and epithermal precious metal mineralization.

The geologic relationships and exploration potential at Gold Basin are more apparent if the various rock units are considered as parts of a structurally layered sequence consisting of the following three "lithotectonic" units, separated on the basis of their structural and alteration characteristics and their structural-stratigraphic position:

1. an Upper Plate or layer of laterally transported, faulted, tilted, cohesive slices of dominantly Tertiary rocks;

TABLE 1

Quaternary	Alluvium
Pliocene (?)	Basalt and conglomerate
Listric faulting-----	
Late Miocene (?)	Sandstone
	Rhyolitic tuff
	Fanglomerate
Gold Mineralization	
Listric faulting-----	GOLD BASIN CRUSHED ZONE-----
Miocene (USGS dates on similar Middle Tertiary volcanics and intrusives are 10-20 my)	Quartz latite welded tuff
	Andesite
	Lamprophyre
	Porphyritic granite
Cretaceous	Granite, alaskite
Precambrian	Granite, gneissic granite and granodiorite, granite gneiss, amphibolite, gneiss.

2. a Middle Plate or layer of sheared and shattered rocks. The lower part of this layer is the "crushed zone," where rocks were completely converted to gouge and ground rock.
3. a Lower Plate or basement of competent rocks below the zone of concentrated low-angle shearing.

These relationships are shown in more detail on Table 2 and illustrated on Plate I, a generalized lithotectonic map of the Gold Basin District.

UPPER PLATE

Rock units in the Upper Plate include thin coherent slivers of Precambrian granite and layered gneiss, Tertiary andesite, sandstone, non-welded rhyolitic tuff, and a fanglomerate composed of mixed fragments and boulders of all earlier rocks. The fanglomerate and rhyolitic tuff are the dominant Upper Plate units in the area mapped and were uniformly rotated so that they dip 20 to 40 degrees to the northeast. The Upper Plate rocks are not shattered, altered or mineralized, and were transposed to their present position on underlying low-angle shears.

The fanglomerate readily disaggregates and forms a lag deposit mantling non-resistant underlying material. Consequently, some of the area mapped as fanglomerate is only a thin cover of eroded fanglomerate debris. A later conglomerate also derived from the eroded fanglomerate was not differentiated from fanglomerate during the mapping.

MIDDLE PLATE AND "CRUSHED ZONE"

The Middle Plate is a complex structural layer up to several hundred feet thick that is composed of numerous coalescing listric faults and thin fault slivers of thoroughly shattered and sheared rocks. Tertiary igneous units are the dominant rocks in the Middle Plate except in the area of the Cyclopic Mine where Precambrian granitic and metamorphic rocks predominate. The Middle Plate was overridden and truncated by the rotated fault blocks of the Upper Plate and its present configuration is that of a prism or lens that is relatively thick west of the Cyclopic Mine. It separates overlying tilted fault blocks of Tertiary fanglomerate and volcanic rocks from the underlying competent granite and metamorphic rocks in the Lower Plate. In this report the Middle Plate unit is defined as the layer of sheared and shattered rocks that differ substantially and are not the same rock type as those in the adjacent Lower Plate. It does not include sheared Lower Plate rocks where they are directly overlain by Upper Plate fanglomerate.

Table 2

Generalized Sequence of Rock Units at Gold Basin

<u>Lithotectonic Unit</u>	<u>Structural Features</u>	<u>Rock Units Affected</u>
Upper Plate	structurally rotated cohesive fault blocks and slivers.	Fanglomerate Rhyolitic tuff Sandstone Andesite Porphyritic biotite granite Layered gneiss
-----Sub-horizontal zone of Shearing-----		
Middle Plate	thoroughly shattered and sheared rocks.	Lamprophyre White Hills granite Fine-grained quartz-biotite granite Porphyritic biotite granite Granite gneiss Layered gneiss Gneissic granodiorite Gneissic granite
Crushed Zone	crushed rock material and gouge	
-----Major Sub-horizontal Zone of Shearing and Coalesced Faults-----		
Lower Plate	competent unsheared rocks.	Lamprophyre and Latite porphyry White Hills granite Alaskite Leucogranite Porphyritic biotite granite Layered gneiss Gneissic granite

The base of the Middle Plate is characterized by 50 to 100 feet of gouge, crushed rock, and quartz breccia. It is this "Crushed Zone" which hosts the exposed mineralization at the Cyclopic, Fry and Senator Mines and which, together with overlying altered and mineralized portions of the Middle Plate, forms the target for the proposed exploration program. Other zones of shearing similar to the "Crushed Zone" occur locally within and at the top of the Middle Plate rocks.

As shown on Plates II and III, exposures of the mineralized crushed zone are near the northeast "wedge" edge of the prism of Middle Plate rocks, and they have been revealed only by relatively recent erosion. Mapping indicates that although the Middle Plate and mineralized crushed zone have been truncated by the Upper Plate both northwest and southeast of the Cyclopic Mine, these favorable units should be present over a larger area in the subsurface to the west.

LOWER PLATE

Lower Plate rocks include the same Precambrian granites, gneissic granites and granite gneiss prominent in the Middle Plate as well as leucogranite, alaskitic altered leucogranite, and layered gneiss. Numerous dikes, sills and irregular bodies of lamprophyre intrude the Lower Plate rocks near the zone of low-angle shearing but are virtually absent elsewhere. Some of the lamprophyre dikes show fragmental and porphyritic characteristics indicating that they are near-surface Tertiary intrusives. Latite porphyry, believed related to the lamprophyre occurs as thin dikes in the northwest quarter of Section 30, north of the Cyclopic Mine. These Tertiary intrusives are spatially related to the general area of gold mineralization and locally occur in the Middle Plate.

A 1972 USGS aeromagnetic map of the area shows a prominent magnetic high centered on Section 32 southeast of the Cyclopic Mine that is indicative of a subsurface Tertiary intrusive. Direct evidence for this postulated subsurface intrusive was not observed during detailed mapping.

MINERALIZATION AND ALTERATION

At Gold Basin gold occurs both in pre-Tertiary, near-vertical white quartz veins within the competent Precambrian rocks of the Lower Plate and as a diffuse mineralization of Middle Tertiary age within the laterally extensive, tabular zones of altered gouge and breccia in the Middle Plate. The extensive tabular zones of mineralization are a type of deposit that could contain major bulk-tonnage gold reserves that would be amenable to modern mechanized mining.

Gold was discovered in the district in the late 1800s and prospecting and mining were active through 1910 and again in the early 1930s. This early work was directed toward mineralization containing .35 ounces gold or more and prospects were preferentially located on exposures of mineralized recemented quartz breccia that appeared similar to veins. The Cyclopic was the largest mine in the district and produced approximately 20,000 ounces of gold from a subhorizontal, tabular zone of gouge and breccia. The property was extensively trenched by Wyman and King in the 1970s and drilled by Inspiration Development in 1978. Data from the trenching and drilling was not available but reserve estimates based on this work were reported by Wyman and King and C. F. Mc Intyre, as:

	<u>Indicated</u>	<u>Possible</u>	<u>Potential Lower-Grade</u>
Wyman-King	300,000 tons at .15 oz Au		12,000,000 tons at .06 oz Au
C. F. Mc Intyre Mining (Consultant)	67,000 tons at .28 oz Au	150,000-300,000 tons at .15 oz Au	Several million tons at .05 oz Au
	60,000 tons of tailings at .10 oz Au		

Mineralization similar to that at the Cyclopic occurs at the Fry and Senator Mines, but the potential for bulk tonnage mineralization has been considered only in the vicinity of the Cyclopic Mine and there is no evidence of any exploration for bulk-tonnage mineralization near these other properties. An isolated old churn drill hole, probably dating to the 1930s, was found in the northwest quarter of Section 31, approximately 3,000 feet southwest of the Cyclopic Mine. This hole was drilled along the extension of a pyritized shattered zone but there is no record of the drilling or the drilling results.

ALTERATION

Alteration reflected by bleaching and hematitic stain characterizes all exposures of the crushed zone and adjacent sheared and shattered Lower and Middle Plate rocks that were permeable to hydrothermal fluids. Siderite, chlorite, sericite, earthy hematite and clay minerals are associated with introduced gold and other metals. Some mobilization of silica is indicated by hairline veinlets and brecciated quartz and pegmatites that were recemented by druzy and vuggy quartz. Minor sulfides, dominantly pyrite, were also introduced and are highly variable in distribution. A pyritized, weakly silicified, shattered zone up to several hundred feet wide in the upper part of the Middle Plate is intermittently exposed for almost one-half mile in the northwest

quarter of Sec. 31, T. 28 N., R. 18 W. Prominent amounts of gold and mercury are associated with this zone of pyritic alteration. Minor hematitic limonite reflecting former fine-grained pyrite also occurs in breccias and gouge at the Cyclopic and Fry Mines and commonly is associated with higher grade gold values.

Fluorine, mercury, tungsten, lead, and minor arsenic were introduced into the altered rocks in addition to gold. Fluorite was observed only in the Middle Plate rocks. It occurs with prominent cerussite in a small prospect near the Cyclopic workings and near the shear zone at the upper edge of Middle Plate rocks to the west. Fluorite and specularite with associated anomalous gold values occur in thin sub-horizontal veinlets in granite near the top of the Middle Plate in the southeast quarter of Section 26, two miles west of the Cyclopic. A small gold-bearing episyenite located three miles east of the Cyclopic is the only other occurrence of fluorite known in the district.

In the northern half of Section 24, north of the Fry Mine, a biotite leucogranite in the Lower Plate exhibits prominent alaskitic alteration. The alaskitic altered granite contains scattered quartz veinlets, muscovite as the only mica, minor disseminated sulfides and some small zones of episyenite. This alaskitic alteration is pre-Tertiary and there is no indication that there is any mineralization of interest associated with it.

GOLD MINERALIZATION

Geologic and geochemical investigations indicate that the gold and associated metals at Gold Basin were introduced into the laterally permeable crushed zone and shattered Middle Plate rocks from narrow, high-angle shear zones in the Lower Plate. Examples of these "feeder" vein zones were observed near the Cyclopic Mine and at a prospect in the exposed Lower Plate two miles to the southeast. Figure 2 is a generalized section reproduced from the previous report that illustrates the distribution of gold in the crushed zone and shows higher concentrations of gold, more than .10 oz, in the upper part of the thoroughly crushed material. The gold distribution reported from the Cyclopic drilling is similar to that shown on the diagrammatic section with values of .10 to .20 ounces of gold in gouge and breccia near the top of drill hole diminishing to zero in the underlying Lower Plate rocks.

South of the Cyclopic Mine a narrow zone of shattered pyritized Middle Plate rocks exhibits a prominent amount of gold. Mineralization here is not limited to zones of intense shearing but occurs in vertically extensive fractured zones and shattered breccia. This association of gold and pyritic alteration in the upper part of the Middle Plate is believed to reflect a center of more intense mineralization with potential for a substantial thickness of higher-grade values in the underlying crushed zone.

granite
rubble

gouge and sand

gouge and breccia

sheared granite gneiss

MIDDLE
PLATE

GOLD BASIN
CRUSHED
ZONE

EXPLANATION

BAR GRAPH OF RELATIVE ASSAYS

VALUES ARE AN AVERAGE OF 2 or 3 SAMPLES
TAKEN AT SIMILAR STRATIFORM POSITIONS

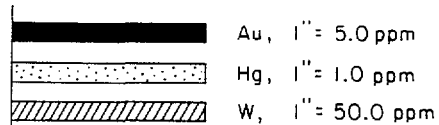


FIGURE 2

DIAGRAMMATIC SECTION
ILLUSTRATING THE DISTRIBUTION OF GOLD
IN THE GOLD BASIN CRUSHED ZONE
MOHAVE COUNTY, ARIZONA

DIAGRAM IS BASED ON GENERALIZED GEOLOGIC AND SAMPLE
DATA FROM THE NE 1/4 OF SECTION 25, T. 28 N., R. 19 W.

SCALE: 1" = ~50'

Detailed investigations at Gold Basin have indicated that:

1. Large amounts of gold were introduced into the entire layer of sheared and shattered Middle Plate rocks.
2. Gold occurs as diffuse and disseminated mineralization in gouge and brecciated rock and is concentrated in the laterally extensive, sub-horizontal crushed zone at the base of the Middle Plate.
3. Higher-grade gold values (10 ppm Au) occur in limonite-stained gouge and breccia in the upper part of the crushed zone and are enveloped in larger volumes of lower-grade mineralization.
4. Gold mineralization is tabular and laterally extensive. In the vicinity of the Cyclopic and Fry Mines, mineralization of potential interest is known through an interval 20 to 50 feet thick and over an area 500 to 2,000 feet wide and 7,000 feet long.
5. Gold is spatially associated with fluorite occurrences and pyritic alteration. Their distribution indicates a center of more intense mineralization south and west of the Cyclopic Mine.
6. Little or no gold mineralization is evident where the Middle Plate is missing and Upper Plate rocks rest directly on the Lower Plate. Detailed mapping indicates that the wedge of Middle Plate rocks and the mineralized "Crushed Zone" expand both in thickness and areal extent south and west of the Cyclopic Mine.

GEOCHEMICAL INVESTIGATIONS

Four to five pound rock-chip samples were assayed for gold and associated trace elements. The samples were taken specifically from exposures of altered and mineralized sheared rocks and gouge, and as non-specific samples of rock and rock debris taken at claim corners. The sample data, including the results of earlier sampling, is tabulated in sample logs in the appendix and is shown on the accompanying geochemical maps. The geochemical results show that:

1. Gold is associated with introduced mercury, lead, tungsten, and fluorine.
2. Metal zoning is indicated by a pronounced separation of introduced mercury and lead with the coincident gold-mercury anomaly associated with pyritic alteration.
3. Gold and the other metals were concentrated in zones of more intense shearing, brecciation and gouge within the Middle Plate rocks and the "Crushed Zone."

Two major zones of gold concentration are evident from the sample data and are shown on the accompanying maps. These are (1) the exposed area of the "Crushed

Zone" beneath overlying sheared Middle Plate rocks, and (2) the zone of pyritic alteration in the Middle Plate south of the Cyclopic Mine. Prominent coincident gold and mercury values occur along this zone of pyritic alteration, but lead values are relatively low. In contrast, the exposed mineralized crushed zone at the Cyclopic and Fry Mines is characterized by minor introduced pyrite and a prominent gold and lead association. The geochemical differences indicate that the pyritic altered area and coincident gold-mercury-anomaly reflect an underlying center of stronger mineralization while the prominent lead association reflects exterior zoning near the wedge edge of the Middle Plate and crushed zone.

The grid samples that were taken confirmed the results of earlier geochemical sampling. They indicate that the mineralization is concentrated in non-resistant sheared zones that are usually covered by debris from overlying rocks and that there was little mobilization of gold and associated metals into overlying shattered rock or the erosional debris. Anomalous metal values from grid samples in areas of poor exposure did provide evidence of underlying mineralized shear zones and the extent and continuity of mineralization.

EXPLORATION POTENTIAL AND RECOMMENDATIONS

At Gold Basin major amounts of gold were introduced into the Middle Plate layer of sheared rocks and gold was concentrated in sub-horizontal zones of intense crushing and shearing to form tabular zones of potential ore-grade bulk-tonnage gold mineralization. This geologic environment is similar to that described in the Mesquite District of southeastern California where Goldfield Corporation recently announced the discovery of a bulk-tonnage gold deposit localized in a gently-dipping shear zone. Mapping at Gold Basin has indicated that only the outer edge of the mineralized crushed zone has been exposed and that the mineralized zone will expand and continue in the subsurface beneath a thin cover of unmineralized rocks. The exploration potential indicated is for a sub-horizontal tabular deposit that could contain 10,000,000 to 20,000,000 tons of .10 ounce gold per ton and/or a much larger amount of lower-grade mineralization. The detailed mapping and sampling indicates that the area most favorable for this exploration potential will be in the vicinity of the zone of pyritic alteration south and west of Cyclopic and Fry Mines near the northwest corner of Sec. 31, T. 28 N., R. 18 W. Here, prominent gold values in pyritic altered rock and coincident gold, mercury, and tungsten anomalies should reflect a larger interval of higher-grade mineralization in the underlying crushed zone.

The program recommended to test this exploration potential consists of :

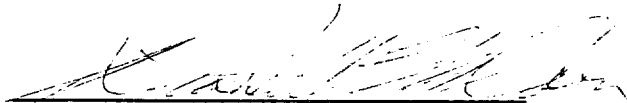
1. Leasing the 80 acres of Santa Fe land adjacent to PCMI's claims in the SE of Section 25, T. 28 N., R. 19 W.
2. Drilling a series of shallow 200 to 400-foot deep non-core drill holes designed to test the exploration concept and the potential of the mineralized crushed zone in the vicinity of the zone of pyritic alteration and anomalous gold. Approximately 5,000 feet of drilling in three separate drill hole fences or profiles is recommended for the initial phase of drilling.

The cost of the proposed exploration is estimated at \$30,000, which would include \$2,000 for the Santa Fe lease and \$28,000 for drilling.

Respectively submitted,

A handwritten signature in dark ink, appearing to read "Richard Ahern", written over a horizontal line.

Richard Ahern

A handwritten signature in dark ink, appearing to read "Russell M. Corn", written over a horizontal line.

Russell M. Corn

August 9, 1991

W.L. Kurtz

ERRATA

Preliminary - Owens Mine Area
of July 22, 1991
Gold Basin District
Mohave County, Arizona

An error has been found in my calculations of the size and the tonnage of the three anomalous areas in the report dated July 22, 1991.


On scaling the distances I put down hundreds of feet instead of thousands of feet -- thus the tonnages are off by an extra zero zero on the end.

Corrected figures for the July 22 report are:

<u>Section</u>	<u>Thickness</u>	<u>x</u>	<u>Length</u>	<u>x</u>	<u>Width</u>	<u>÷</u>	<u>Factor</u>	<u>=</u>	<u>Tonnage</u>
36	100'		2500		1000		12.5	=	20,000,000
31	100'		2500		1000		12.5	=	20,000,000
2-3-35	100'		3000		2500		12.5	=	60,000,000

New outlines have now been submitted by C.O. Windels and a report is in press. The thickness figures will change to 30' to 40', but the tonnage will still be significant, rather than inconsequential as per the July 22 memo.

JDS:mek


James D. Sell

ASARCO

Southwestern Exploration Division

July 22, 1991

W.L. Kurtz

*Thank you
Probably about this!*

C.O. Windels' Interpretation
Preliminary - Owens Mine Area
Gold Basin
Mohave County, Arizona

Attached is a copy of the preliminary interpretation of the Dighem data of the Owens Mine flight block. Windels will put out a report on this with more definitive outlines.

In Section 31, in Qal, a coincident shallow conductor and mag alteration low sets off the bedrock where a vein of Au Pb Cu in quartz-siderite is located in the footwall of the detachment zone. A northwest-trending fault is mapped in the bedrock and the other black lines to the northwest are magnetic gradients picked out by Windels. This fault undoubtedly offsets the detachment surface.

In Section 36, a number of magnetic gradients trending northwesterly from the bedrock of Owens Mine, point toward the three offset (to west) zones of surface conductor, shallow conductor, to deep conductor with argillic characteristics. The S-1 drill hole, on the edge of the shallow conductor, crossed the detachment at 210 feet and had a 0.01 opt gold value in the footwall from 240-285 feet. Thus the deep conductor may be a buried Owens type mineralization in footwall rocks.

The larger deep conductor in sections 35, 2, and 3, is flanked on the west by a shallow conductor in bedrock of chlorite-siderite alteration and on the south by a shallow conductor with mag alteration low. The south zone has a number of drill holes in footwall gneiss with a smell of gold values. Hole om-66 (at the X in Xgn, section 2) had 5' (10'-15') of 0.013 opt gold and 15' (170'-185') of 0.013 opt gold while holes om-67, -68, & -69 located 400' north had no mineralized zone within the gneiss unit interval, and are outside of the conductor outlines.

Either Santa Fe or the State has the subsurface mineral rights in these areas.

In section 36 (C.O. Windels' favored target), if the deep conductor had 100' of mineral then, $100 \times 100 \times 250 \div 12.5 = 200,000$ ton target. If mineralization extends into the shallow conductor zone then the tonnage might double. The section 31 zone is of similar size.

July 22, 1991

W.L. Kurtz

C.O. Windels' Interpretation
Preliminary - Owens Mine Area
Gold Basin
Mohave County, Arizona

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*oops - additional "0" dropped from
width - length !
then $100 \times 1000 \times 2500 \div 12.5 = 20,000,000$ tons !*

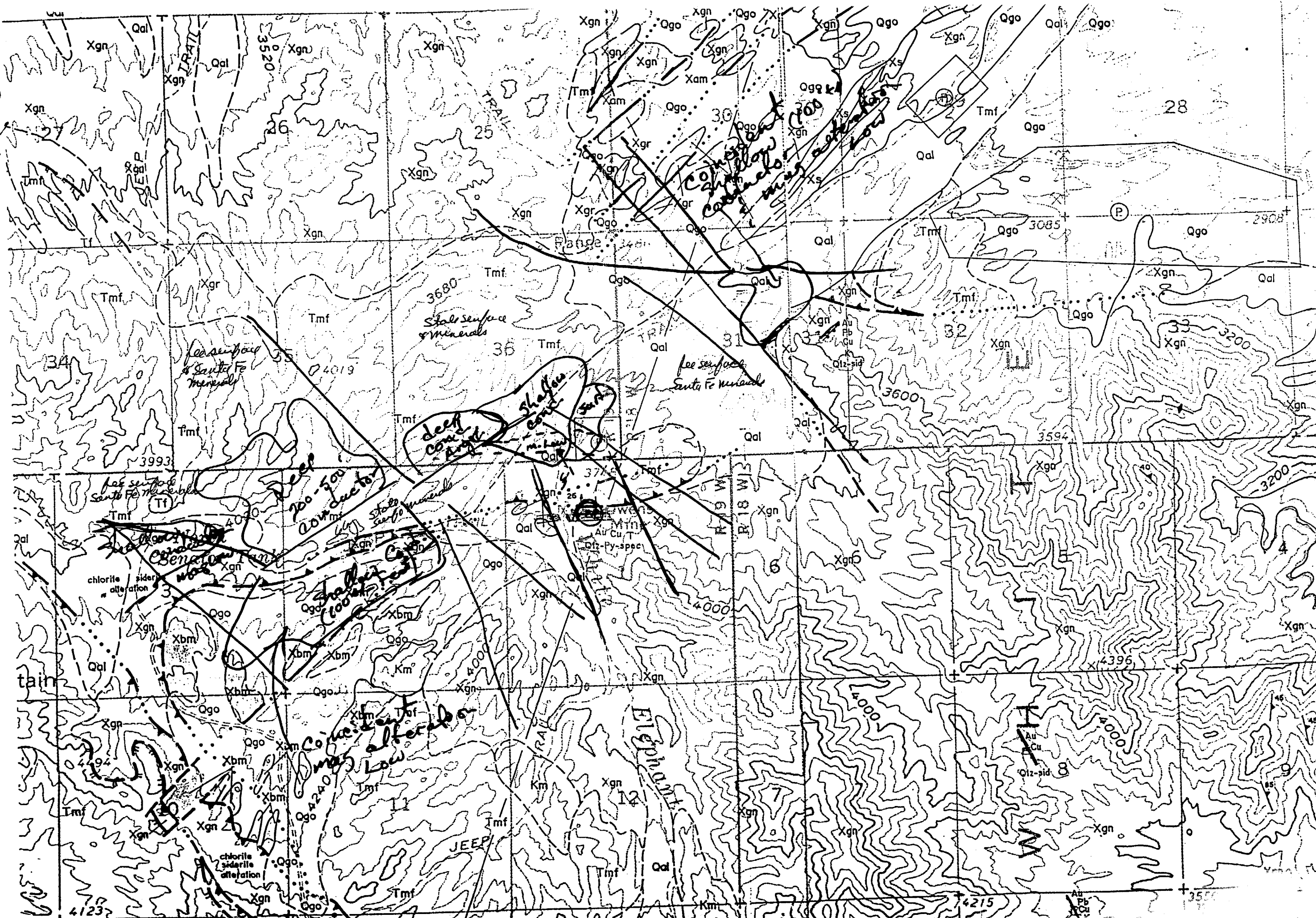
The larger zone in sections 2-3-35, might have $100 \times 250 \times 300 \div 12.5 =$
600,000 tons. *60,000,000*

Based on the above, a 1 to 2 million ton target is suggested which will
need a good opt gold content.

JDS:mek
Att.

James D. Sell
James D. Sell

SCALE
1:24,000



ASARCO

ASARCO Incorporated

AUG 7 1991

SW Exploration

8/91

JDS

Exploration Department

Owens Mining Area

Gold Basin Dist.

Mohave Co., AZ

August 5, 1991

TO: J. Sell

FROM: C. Windels

Gold Basin Project Dighem
IV Interpretation

The purpose of the Helicopter Electro-magnetic survey (HEM) was to delineate areas permissive of argillic and or siliceous alteration.

The clay rich argillic alteration is identified as low resistivity areas on one or all of the four frequencies.

The principle target is as follows:

Hydrothermal alteration identified by resistivity lows associated with alteration mag lows along the down dip projection of the Owen's low angle structure.

Three sets of data have been combined to form a ternary plot designed for the following illustrations:

Aspect	Data Set
1. Blind; Covered Alteration	Blind Conductors
2. Hydrothermal Alteration Magnetic Destruction	Residual Magnetics
3. Foot Wall Outcrop or Subcrop	Surface Resistors

Three areas have been identified as targets with high potential to locate alterations associated with a bulk mineable gold deposit.

Target	Location
Owen's West	T28N, R19W: Sec. 2 and 3
Owen's North	T29N, R19W: Sec. 36
Owen's East	T29N, R18W: Sec. 31

The transparent overlay can be used as an index and also show the location of recommended drill sites to test the HEM anomalies.

Gold Basin Project
Dighem IV Interpretation
August 5, 1991
Page 2

List of Figures

Base Map - Overlay

Residual Magnetism
Surface Resistors
Blind Conductors

Ternary Map

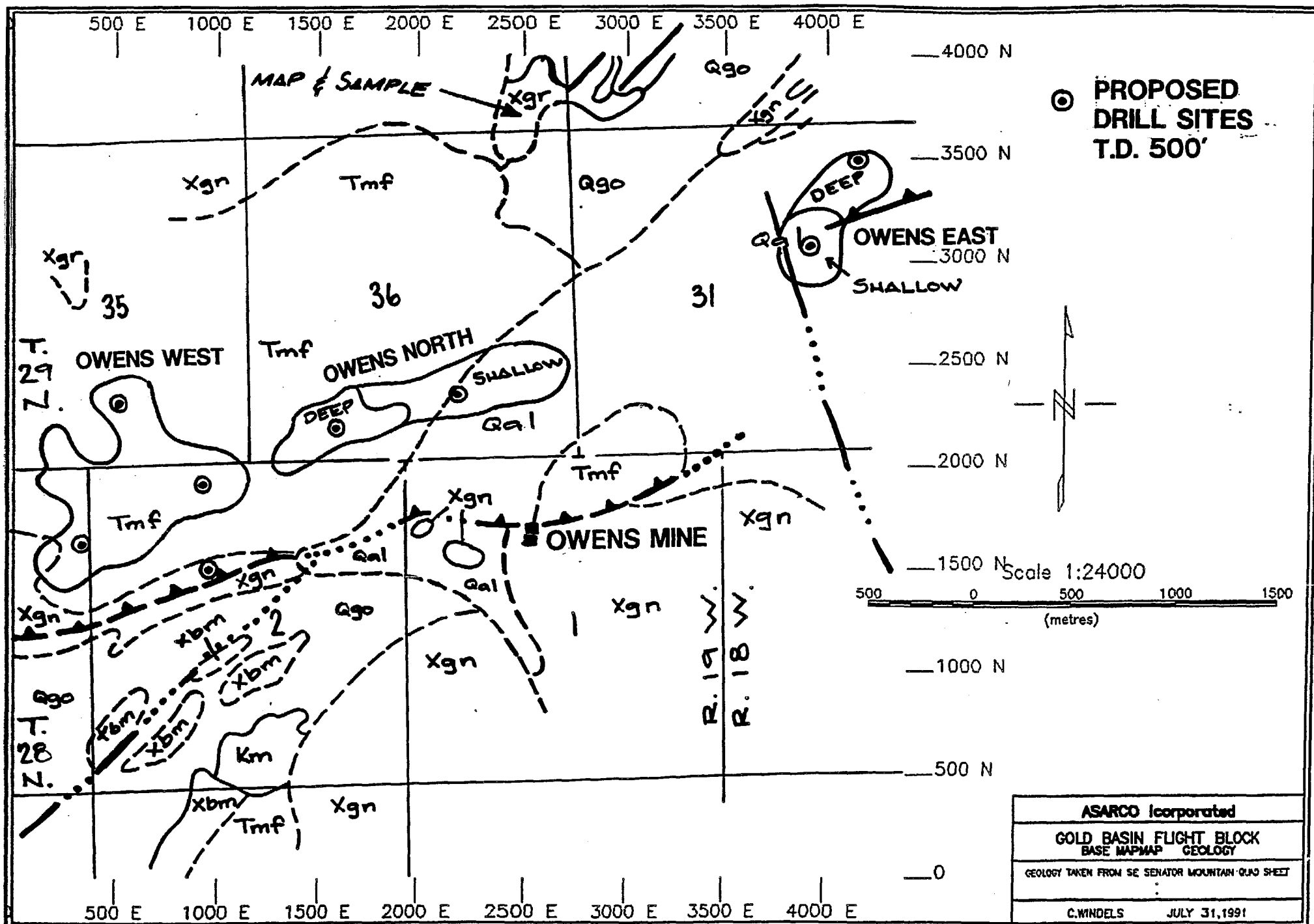
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56,000 Hz Resistivity
7,000 Hz Resistivity
1,280 Hz Resistivity
519 Hz Resistivity

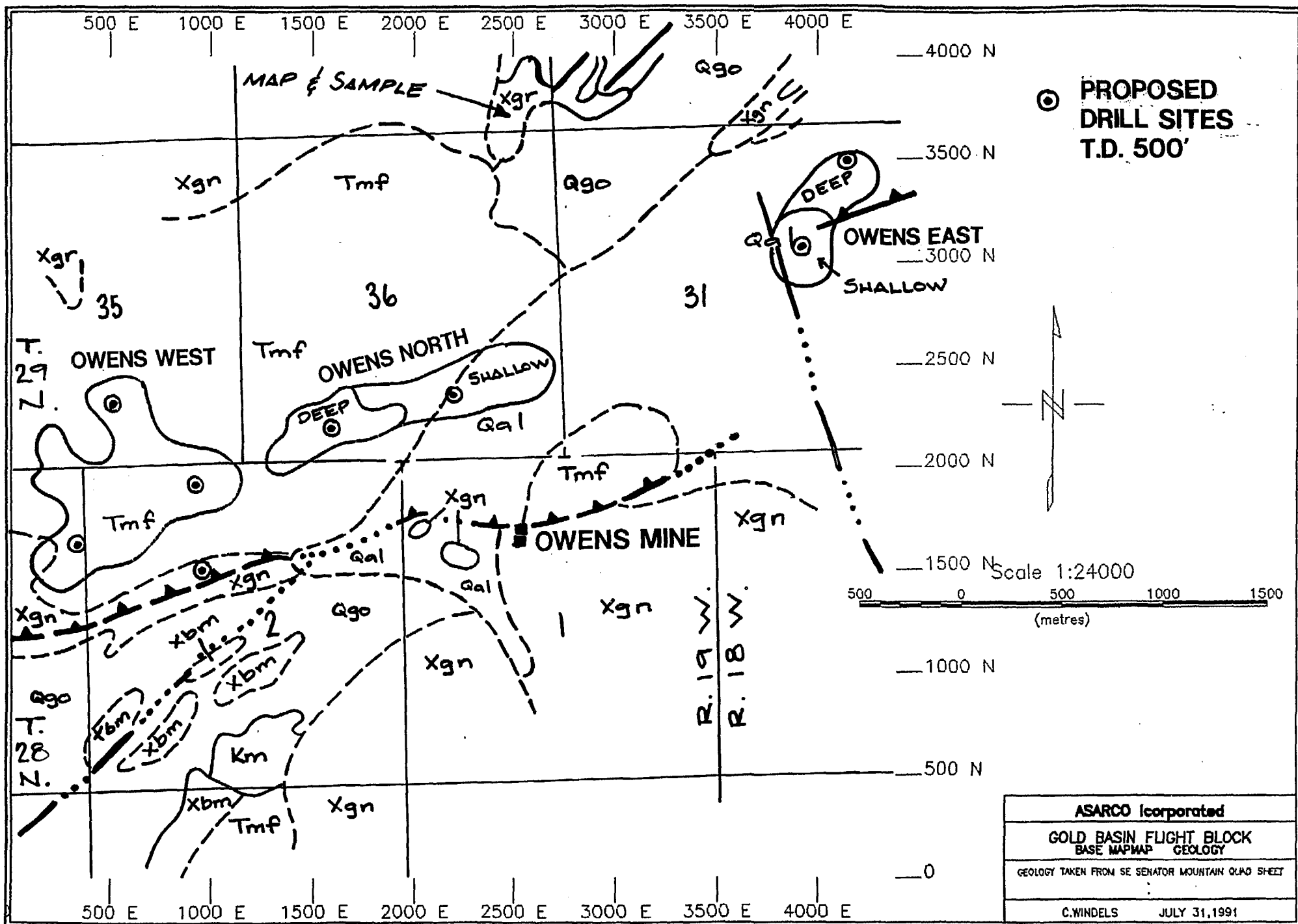
Carl Windels

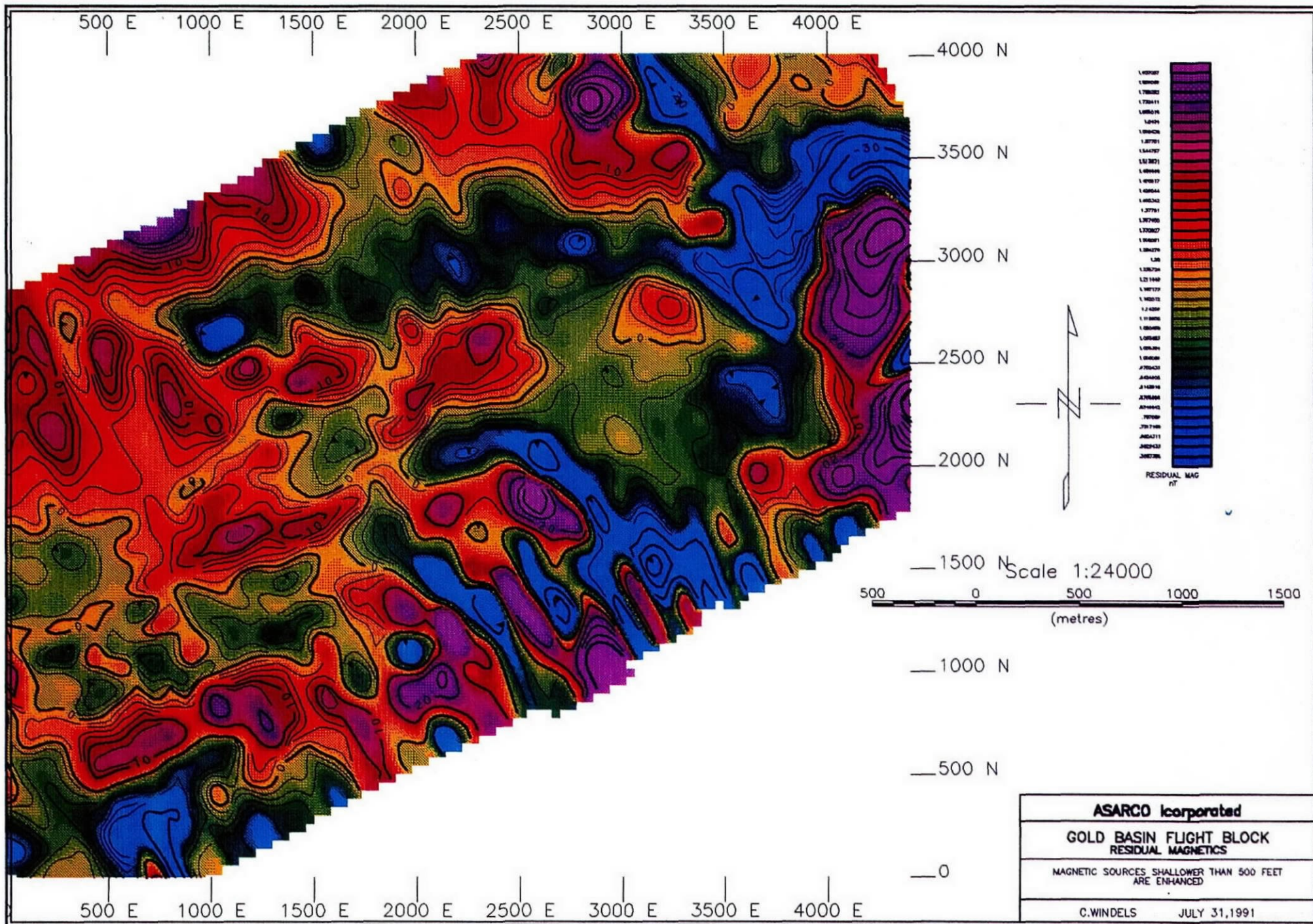
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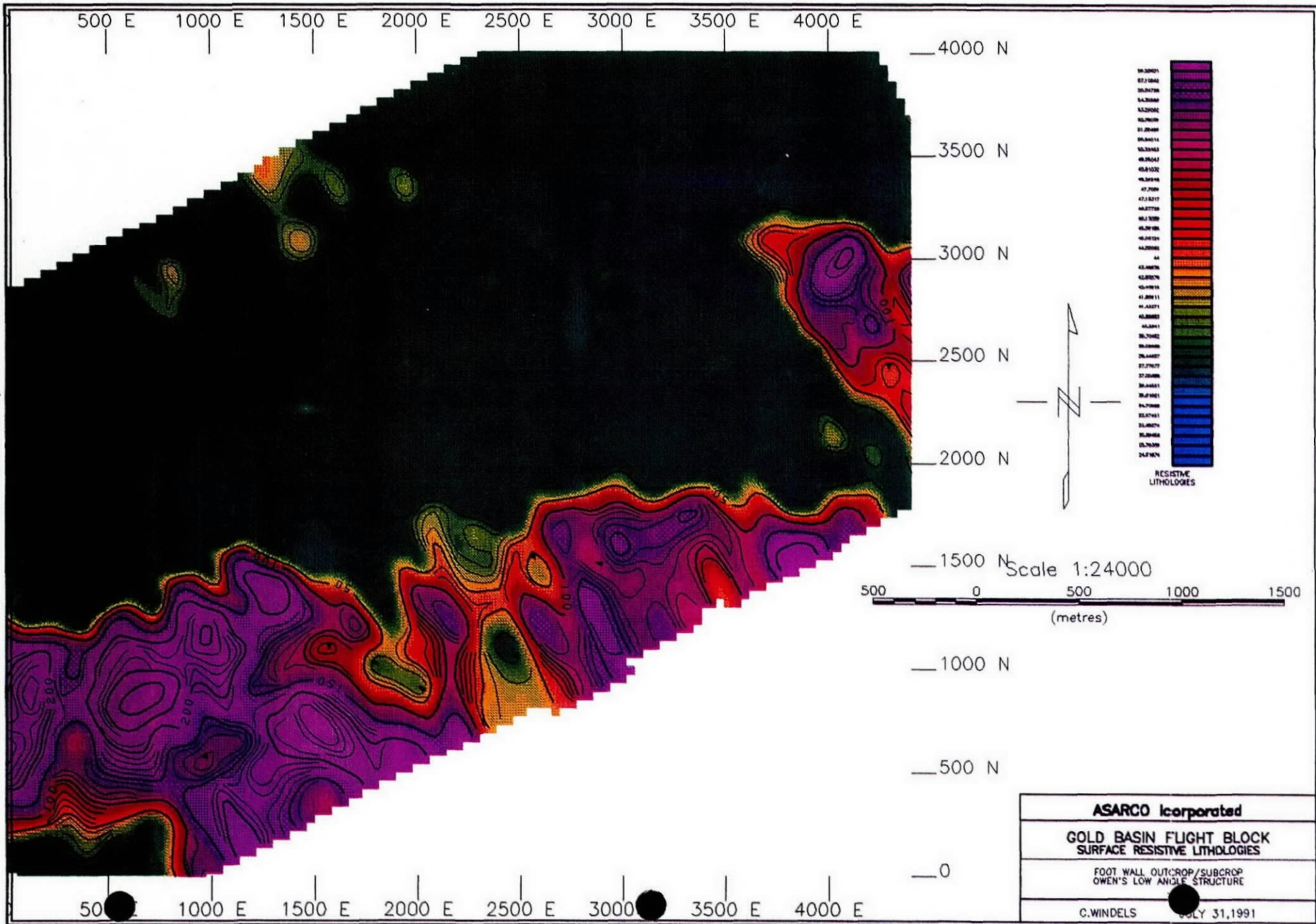
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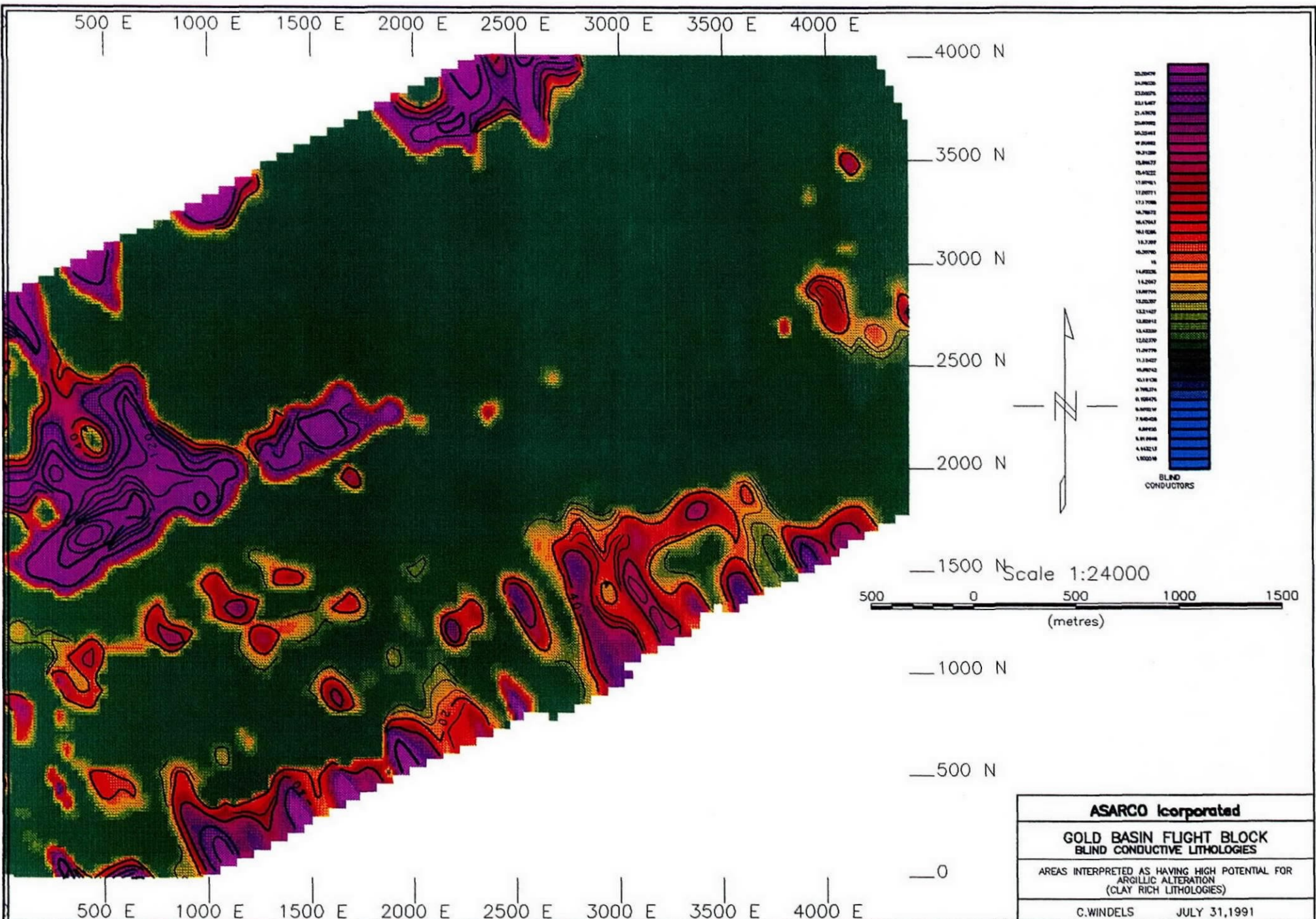
cc: F. Graybeal
B. Kurtz

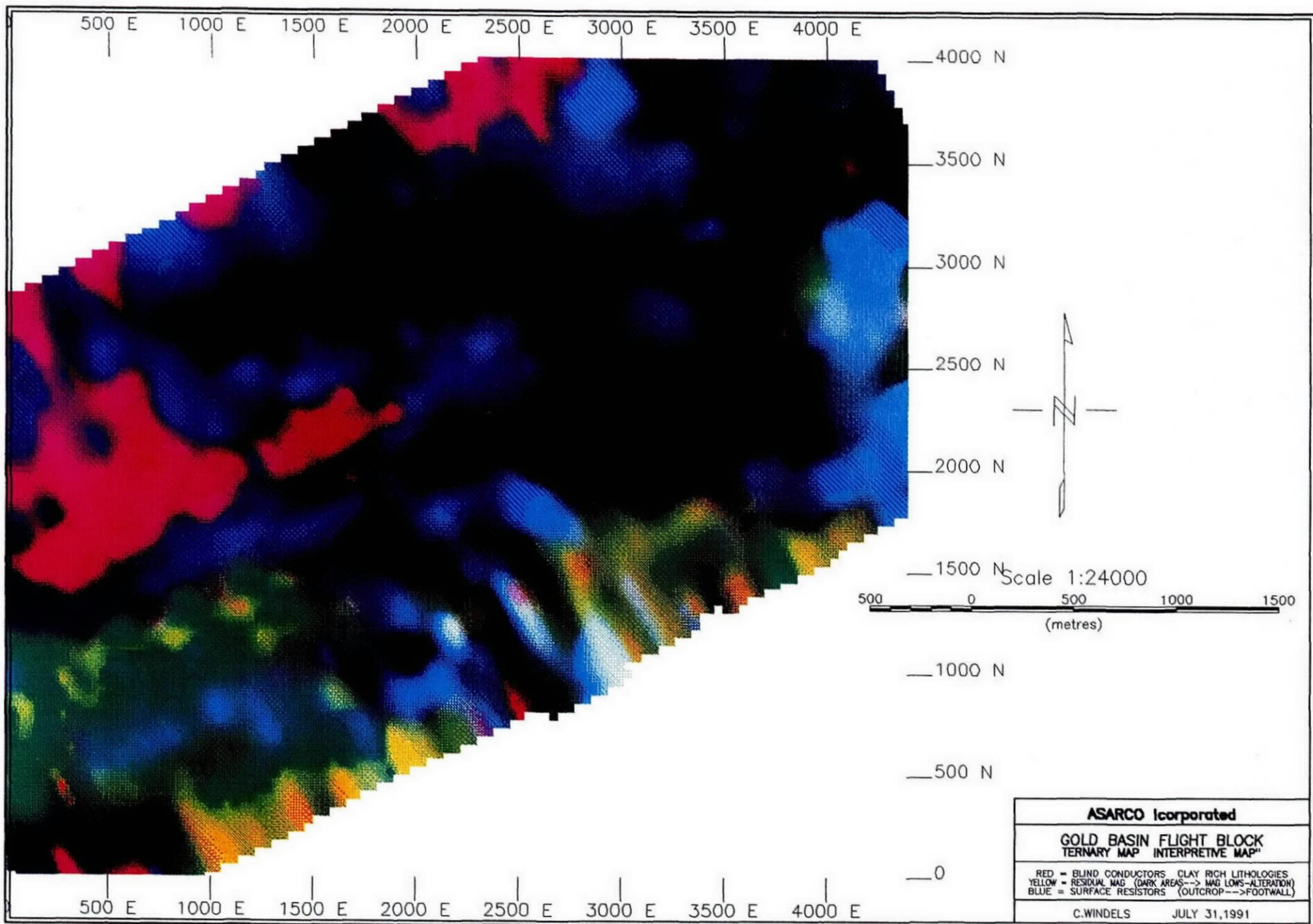


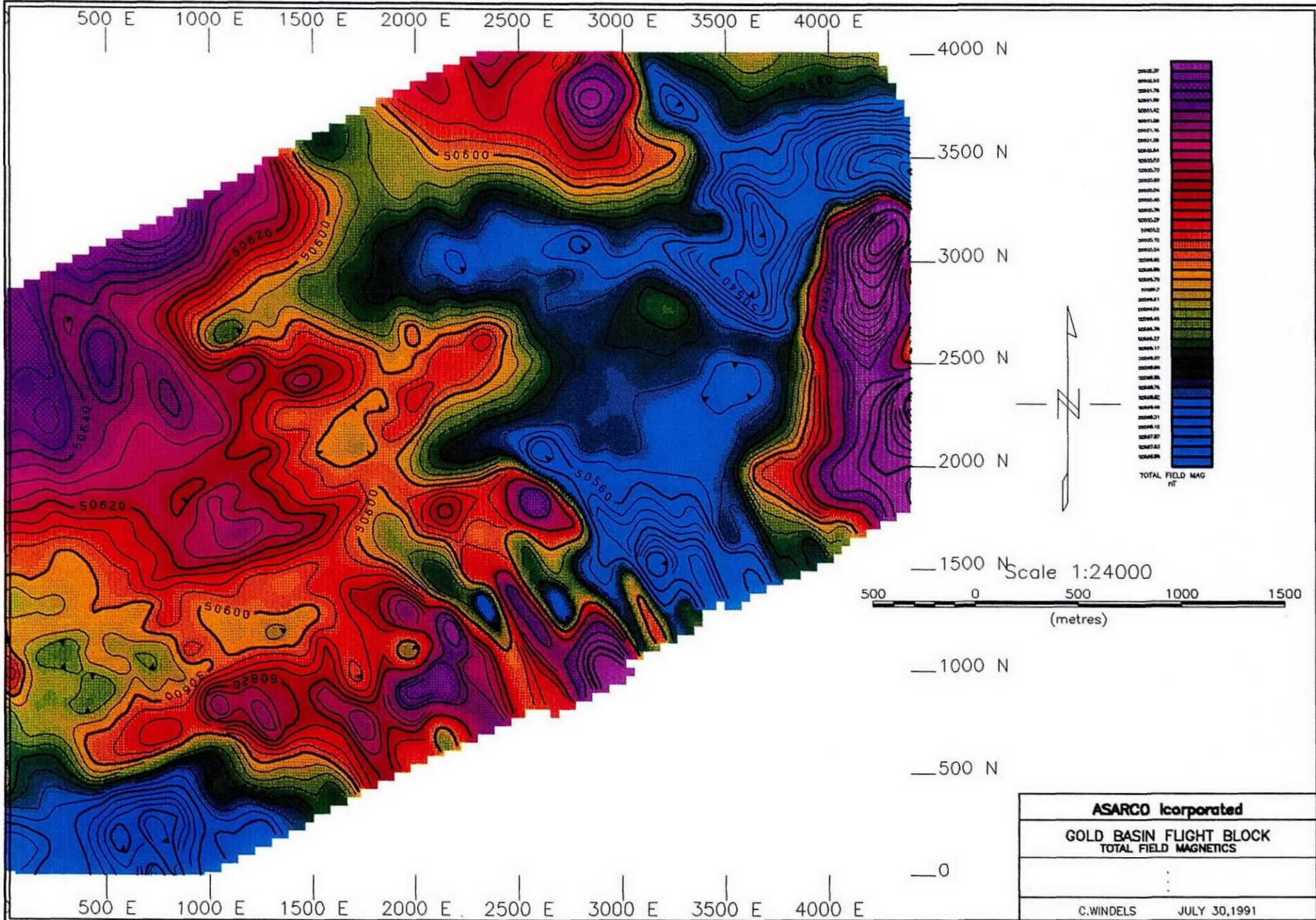


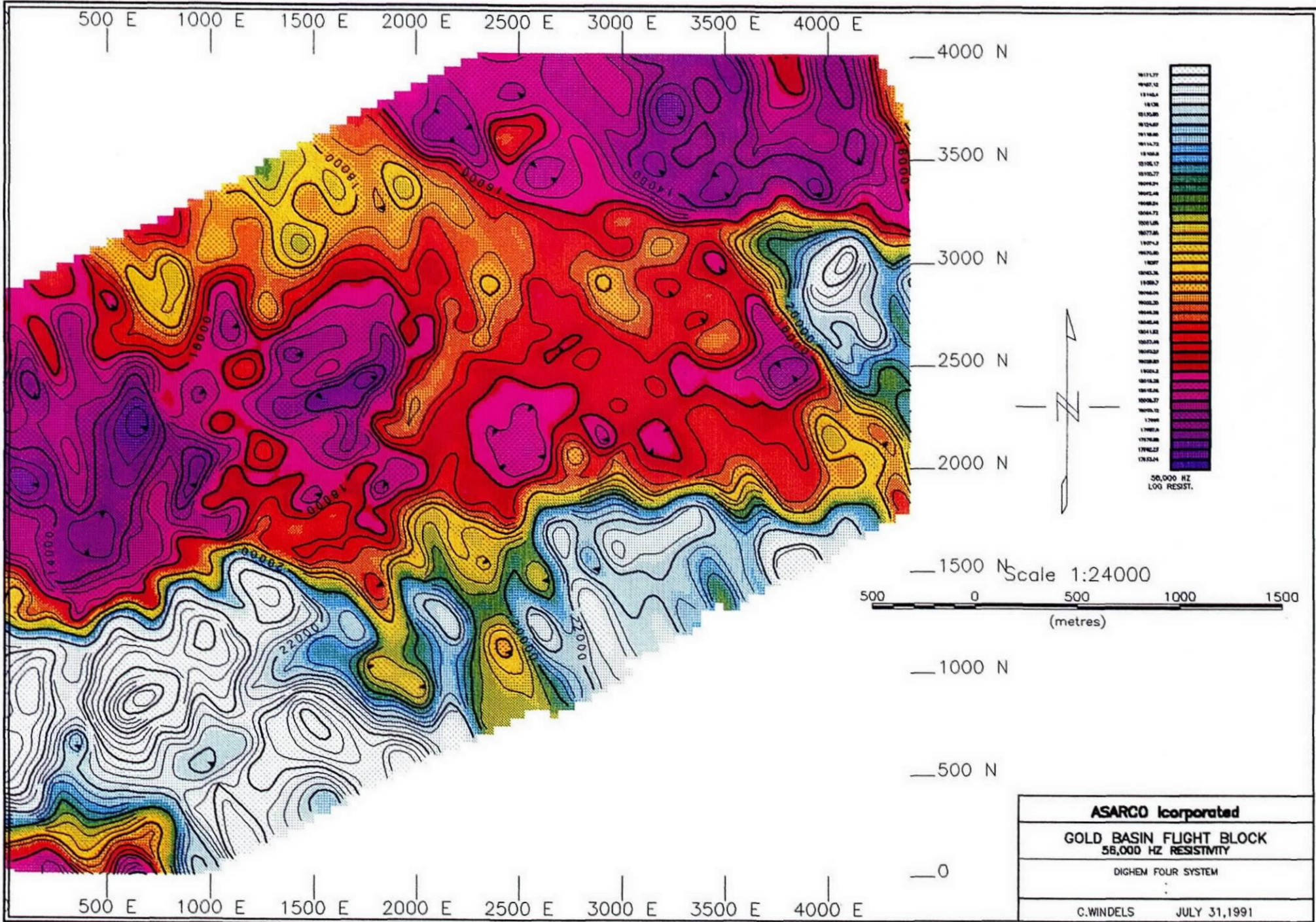


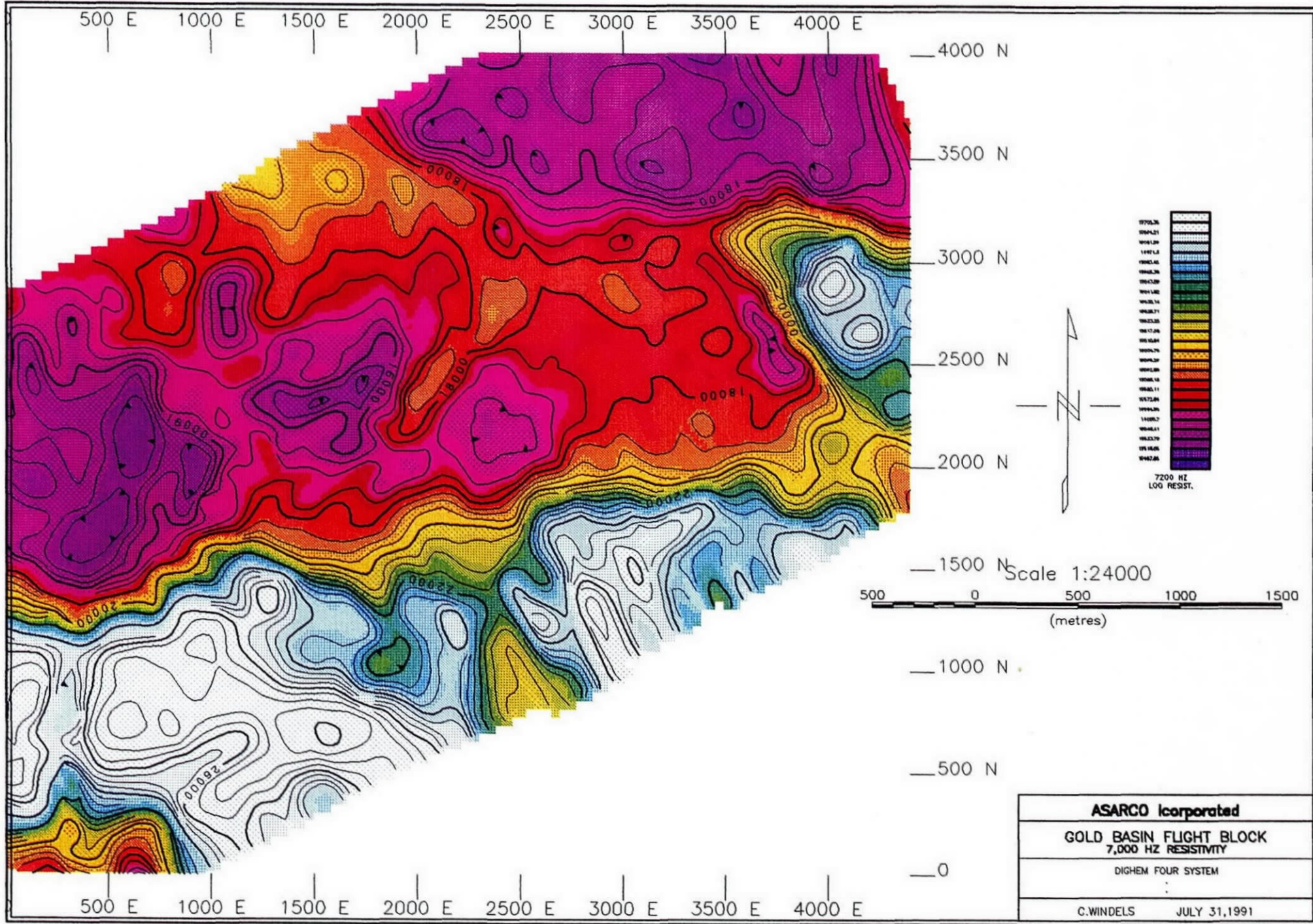


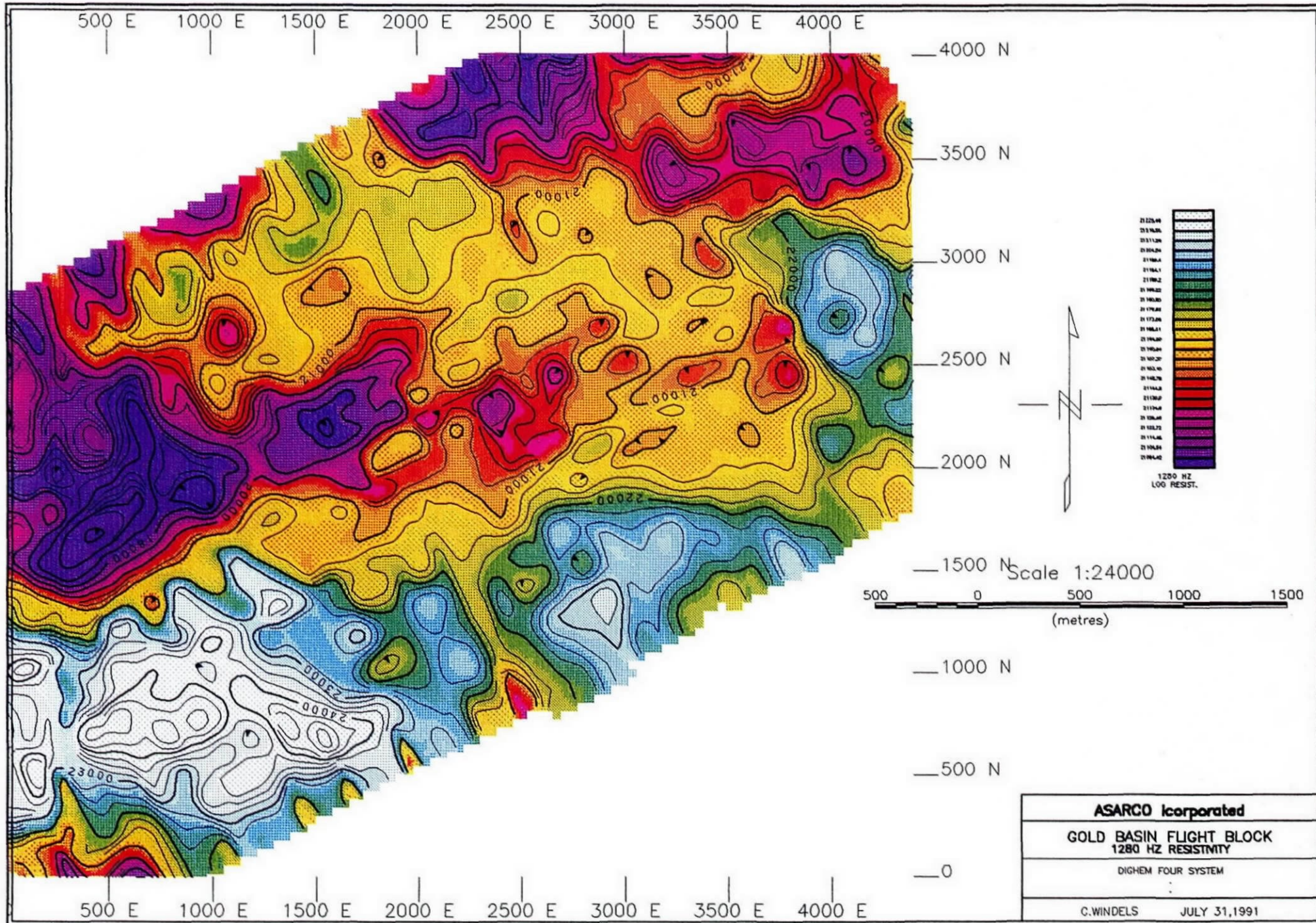


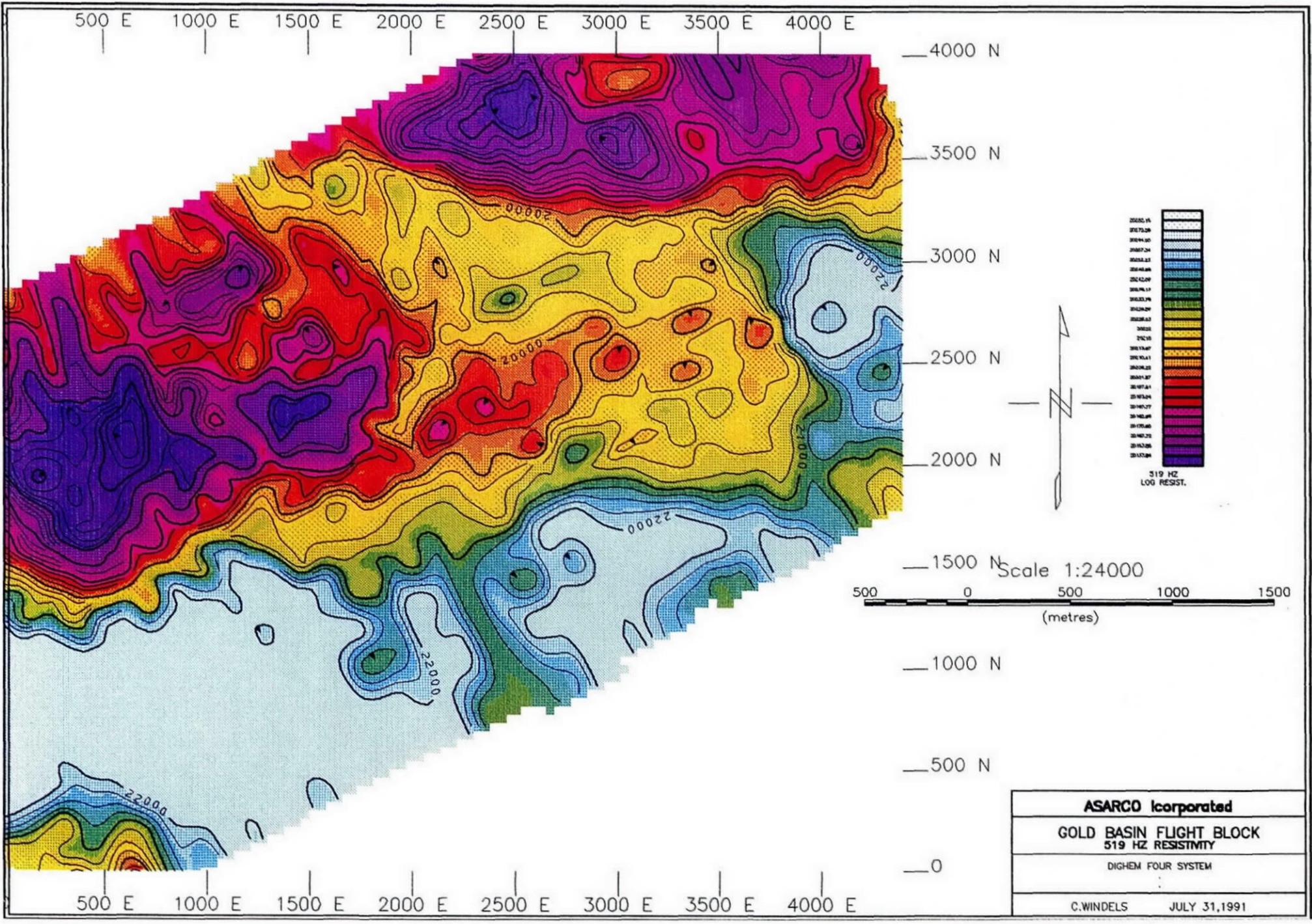












ASARCO Incorporated
GOLD BASIN FLIGHT BLOCK 519 HZ RESISTIVITY
DIGHEM FOUR SYSTEM
C.WINDELS JULY 31, 1991

Flight Block GOLD BASIN LINE MILES: 71 FLIGHT LINE DIRECTION: NE-SW
 Scale 1:6000
 Location Lat. _____ Long. _____ NE Corner UTM EAST 749,000 UTM NORTH 3,973,000
 Lat. _____ Long. _____ SW Corner UTM EAST 744,000 UTM NORTH 3,969,000
 COUNTY: MOHAVE COUNTY STATE ARIZONA MINING DISTRICT _____

WORKSHEET DATE : 28-Jul-91	Date Completed	Scale	CHECKED/ APPROVED	NOTES
Geologic Base				
Land Status				
Flying Completed	MAY 3, 1991			
RAW DATA RECEIVED BY DIGHEM TORONTO	MAY 12, 1991			
RAW DATA RECEIVED BY ASARCO	MAY 14, 1991 MAY 22, 1991	1:12000 1:6000	C.WINDELS C.WINDELS	DIGITAL GRIDS WHERE NOT ALIGNED WITH NORTH UP (5/14/91) NEW DIGITAL GRIDS RECEIVED WITH CORRECT ORIENTATION. (notified by DIGHEM 6/3/91 that the UTM tie points are in error) <<<<*****
Preliminary GRID DATA	MAY 14, 1991 MAY 22, 1991	1:12000 1:6000	C.WINDELS C.WINDELS	DIGITAL GRIDS WHERE NOT ALIGNED WITH NORTH UP (5/14/91) NEW DIGITAL GRIDS RECEIVED WITH CORRECT ORIENTATION.
RECEIVED BY ASARCO (RADIOMETRICS)	JUNE 5, 1991 JUNE 10, 1991	1:6000 1:6000	C.WINDELS C.WINDELS	CORRECTED UTM GRID RECEIVED PED EX NOTIFIED TUCSON TO DISTROY PRELIMINARY DIGHEM DATA AND ASARCO COLOR 8x11's MAILED TO J.SELL AT THE TUCSON OFFICE-- NO TARGETS PICKED YET--I'm not sure of the geology-target (6/7/91)
Asarco Processing LAYERED DOMAIN	MAY 24, 1991	1:14,300 +/-	C.WINDELS	MAILED TO J.SELL AT THE TUCSON OFFICE-- NO TARGETS PICKED YET--I'm not sure of the geology-target (5/24/91)
LAYERED	JUNE 7, 1991	8x11 color	m.asplund	MAILED TO J.SELL AT THE TUCSON OFFICE-- NO TARGETS PICKED YET--I'm not sure of the geology-target (6/7/91)
RAD 8x11 COLOR	JUNE 13, 1991	8x11 color	M.ASPLUND	MAILED TO J.SELL AT THE TUCSON OFFICE-- (6/18/91)
JDS-COW Denver Conference GDS	July 17, 1991 July 22, 1991	all day review memo		Anomalies picked out & roughly outlined. memo report to W.K. on interpretative anomalies & possible tonnage/targets
DIGHEM FINALS	JULY 25, 1991	1:12000	C.WINDELS	MAILED TO JIM SELL JULY 29, 1991
ASARCO FINALS LAYERED DOMAIN				

Flight Block GOLD BASIN LINE MILES: 71 FLIGHT LINE DIRECTION: NE-SW

WORKSHEET DATE : 28-Jul-91	DATE TRANSMITTED	TO	SCALE	GEOPHYSICAL SIGNATURE COMMENTS	RANGE	TOWNSHIP	SECTION	FIELD CHECKED DATE/BY	COMMENTS/ Recommendations
ANOMALY									
OWENS WEST	JULY 16, 1991	J. SELL	1:24000	DEEP CONDUCTOR; MAG ALTERATION	R19W	T28N	2; NE 1/4 SEC.3		GOOD ANOMALY ASSOCIATED WITH WEAK AU MINERALIZATION FOUND IN
				LOW	R19W	T29N	S 1/2 SEC.35		PREVIOUS DRILLING IN SECTION 2. LOOKS AS GOOD AS THEY COME !!
OWENS NORTH	JULY 16, 1991	J. SELL	1:24000	DEEP CONDUCTOR	R19W	T29N	S 1/2 SEC.36		E-W TRENDING ZONE; PLUNGING TO THE WEST
									SHOULD OUTCROP-SUBCROP IN SW CORNER OF SECTION 36
OWENS EAST	JULY 16, 1991	J. SELL	1:24000	SHALLOW CONDUCTOR; WITH GOOD M	R18W	T29N	NE 1/4 SEC.31		THE ANOMALY APPEARS TO BE LOCATED ON A OFFSET
									PORTION OF THE LOW ANGLE FAULT ASSOCIATED WITH THE OWENS MINE
<i>JDS</i>	<i>Aug 9, 1991</i>	<i>Crater to WLK</i>		<i>Correction on depth, width - Jennings</i>					
<i>JDS</i>		<i>Report to WLK</i>		<i>Investigation, recommendations, mapping, sampling</i>					

August 9, 1991

W.L. Kurtz

Review of C.O. Windels
Dighem IV Interpretation
Summary - Recommendations
1991 Sampling & Mapping
Owens Mine Area
Gold Basin District
Mohave County, Arizona

Summary-Recommendations

I recommend the drilling of three reverse-circulation drill holes for a total of 1000 feet of drilling, to test two of the three anomalies in the Owens Mine area.

The three holes would be on land controlled by Santa Fe Minerals. Mr. Russ Corn may be the owner of the Santa Fe Minerals lease, but I have been unable to contact him since he called to say that the Canadians were pulling out and would assign the leases to him.

Table 1. Synopsis of Owens Target Areas

<u>Area</u>	<u>Est.Tonnage</u>	<u># Holes</u>	<u>Ownership</u>	<u>Best Results Au</u>
East	3.5 million	1	surface, fee; minerals, Santa Fe	OM-1, 23 ppb OM-2, 10 ppb
North	11.8 million	-	State, surface- minerals	S-1, 3', 0.009 opt S-1, 36', 0.002 opt
West	16.2 million	2	50% - Surface, fee; minerals, Santa Fe	OM-5, 22 ppb
		-	50% - State surface- minerals	#77888, 30', 0.018 opt
	31.5 million			

The targets are mineralized zones lying within the detachment style faulting of the Owens Mine structure. The thickness of mineralization is expected to be in the 35'-50' range, with the top of the zone lying within 300 feet of the alluvial wash surface.

The three holes will reveal the potential for the target areas and provide the incentive for continuing evaluation of the adjacent Arizona State Lands.

Review of Dighem IV Interpretations with 1991 Mapping and Sampling Results

Following the review of the Owens Mine area Dighem IV data with C.O. Windels in Denver, I revisited the area of the three anomalies as outlined by Windels.

A preliminary interpretation of the Dighem data was submitted to you in a

August 9, 1991

W.L. Kurtz

we can do better

Review of C.O. Windels
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A preliminary interpretation of the Dighem data was submitted to you in a

report dated July 22, 1991, and the more definitive report was submitted by Windels dated August 5, 1991. A calculation error had been made on the tonnages reported in the July 22 report, and an errata memo dated August 9, 1991, corrected the preliminary tonnage estimates.

Attachment A is the Owens Mine area and the added mapping in Section 31, T29N, R18W, has increased the distribution of the amount of outcrop of Precambrian gneiss (Xgn) and Tertiary fanglomerate (Tmf). Extension of the trace of the Owens Mine detachment fault and the major offsetting fault was also mapped and interpreted. Attachment A also has the four new sample sites in Section 31, T29N, R18W, and the single site in Section 3, T28N, R19W. The three recommended holes on Santa Fe Mineral lands within the East and West anomalous zones are also plotted, along with previous drill hole locations.

Attachment B is from the July 22 report of C.O. Windels showing his three interpreted anomalous areas: Owens East, North, and West, along with his proposed drill sites to test the zones. A clear mylar of Attachment B is enclosed to overlay the geology, sample, drill map of Attachment A.

Owens East. Mapping has expanded the known outcrops of Xgn and Tmf. The entire shallow portion is covered by exposed gneiss in the footwall of the Owens Mine detachment fault (OMdf). Sample OM-1 was collected from this footwall gneiss and reported 23 ppb gold value. Tables 2 and 3 contain the sample data and the low gold value is from nearly non-altered gneiss with hematite stain and paint on fractures and schistosity.

Sample OM-2 was collected in the hanging wall of the OMdf. The ridge was highly shattered and had abundant FeOx on foliation and fractures, but the sample only returned a 10 ppb gold value (Tables 2 and 3). Sample OM-2 is within the deep portion of the East anomaly. Most of the anomaly is under Quaternary alluvial cover in the Elephant Wash drainage, with the narrow ridge of Xgn over the north edge of the anomaly outline.

Sample OM-3 was collected outside the East anomaly and it reported 5 ppb gold values. The site is in the hanging wall of the OMdf as mapped in the field, and in the footwall of the detachment style fault as shown on the Windels interpretation.

Sample OM-4 is outside the East anomaly, but about the same distance in the hanging wall from the projected OMdf as in Sample OM-2. Sample OM-4 is from shattered iron-stained gneiss and returned a gold value of less than 5 ppb gold.

Based on the narrowest part of the Elephant Wash between samples OM-1 and OM-2, it is possible that a fifty-foot thick zone of intensely shattered and mineralized rock could be developed along and downdip within the OMdf projection. The Owens East target would be 50' thick by 1100' long by 800' wide divided by 13 tonnage factor equals ~3.5 million ton target for the deep portion. One hole is recommended to test this target. Attachment C plots the cross section through the proposed hole.

Section 31 is fee surface and minerals Santa Fe. Access is open along the Elephant Wash.

Owens North. The anomalous zone is in Section 36, T29N, R19W and the southern edge is 500 feet north of drill hole OM-83-S-1. Hole S-1 synopsis is as follow:

Surface - 24'	Quaternary alluvium
24' - 215'	Conglomerate (Tmf)
215' - 240'	Mafic Unit (Xgn), tr.hem, clay (Average 0.005 ppm Au)
240' - 276'	Xgn; gneiss and mafic, red-brown-yellow FeOx, tr.qtz vein, low level gold anomaly. (Average 36' OMdf Zone of 0.052 ppm Au, with 3' (252'-255') of 0.305 ppm Au).
276' - 486' T.D.	Xgn; gneiss, mainly fresh with minor brown-red FeOx (all samples 0.005 or less ppm Au, except for altered zone, 309'-315' of 0.008 ppm Au).

The next closest hole, NW $\frac{1}{4}$, Section 1, apparently had 40 feet of altered and FeOx stained rock which returned values of less than 0.005 ppm Au.

Based on these two holes, I would revise the thickness of the anomalous zone to be 40 feet. Thus:

1. Shallow: $40' \times 3000' \times 800' \div 13 = 7.4$ million tons
2. Deep: $40' \times 1800' \times 800' \div 13 = \frac{4.4 \text{ million tons}}{11.8 \text{ million tons}}$

Section 36, Owens North is Arizona State surface and minerals. No inquiry has been made as to who may have a lease on the section, but posts were noted in the field, which may be related to the placer ground.

The shallow target is easily accessed along the road in the wash and should be less than 200 feet to the top of the zone. The deep target is under the fanglomerate hill which would require a road building site and be up to 400 feet to the top of the target.

Attachment C plots the interpreted geology and target for this area.

Owens West. The zone is the largest of the group. It is located in parts of sections 35, 2, and 3 and overlain by several hundred feet of fanglomerate in the higher parts, but there may be less than 100 feet of fanglomerate cover in the main wash traversing the anomaly.

Sample OM-5 was collected just west of the west end of the anomaly in Section 3. The outcrop of gneiss is highly fractured, is a color zone, and is in the hanging wall unit of the OMdf. The sample returned a 22 ppb gold value.

Windels has also proposed a hole outside the anomaly in the north central part of section 2 (T28N, R19W), near the outcrop of the Owens Mine

detachment fault. Six holes have previously been drilled in this part of the fault system and all are interpreted to have intercepted the OMdf shattered zone.

The holes had a zone thickness of 25', 30' and 45', of altered, FeOx stained unit, and five holes reported 0.005 or less opt gold values. One hole, #77888 reported 30' (315'-345') of 0.018 opt gold. No hole is recommended to recheck these values outside the anomalous zone.

Two holes are recommended to test the anomalous zone which may be a 40' thick x 3500' x 1500' $\div 13 = 16.2$ million ton target. About half the target is in section 35 and section 3 which is surface fee and minerals Santa Fe and is recommended for drilling. The remaining 50% is in section 2 and is Arizona State fee and minerals which has not been researched as to any lessees.

Attachment C plots a cross section through the proposed northern hole.

Access to the target is by way of the major drainage easterly from sample site OM-5, and depth of fanglomerate is probably between 100' and 200' in the wash. Much of the anomaly, as shown, is under the higher slopes of fanglomerate.

As noted, the land situation is mixed Arizona State and Santa Fe minerals. No review of lessees of State land has been made. Should Mr. Corn secure the Santa Fe mineral leases, then I'm confident an equitable agreement can be secured. Surface owner of Santa Fe mineral ground has not been researched, but this should not be a cumbersome problem in these sections. The Arizona State leases may have also been picked up by the Canadians and might be reassigned to Mr. Corn.

The drilling of the three holes should cost around \$20,000 with clarification of the land situation a cost of one to two times the drilling dollars.

Gold values are found around the Owens Mine detachment fault system, with a drilled resource of 385,000 tons of 0.026 opt gold at the Owens Mine in the NW $\frac{1}{4}$, Section 1, T28N, R19W.

The interpretive Dighem data suggests better targets under the alluvial and fanglomerate cover than in the Owens Mine area.

JDS:mek
Attachments

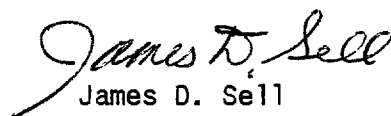

James D. Sell

Table 2. Samples and Descriptions - Owens Mine Area Samples - 1991

<u>Sample Number</u>	<u>Location T.R.,Sec.</u>	<u>Distance from Line</u>	<u>Description & Gold Value</u>
OM-1	T29N,R18W, Sec. 31	1750 FNL 1850 FEL	Xgneiss, shattered footwall unit to Owens Mine detachment fault (OMdf), with hematite stain, paint and some reddish FeOx. 23 ppb Au
OM-2	T29N,R18W, Sec. 31	1300 FNL 1500 FEL	Xgneiss, shattered hanging wall unit to OM detachment fault, massive appearing but highly faulted sub-parallel to OMdf, and high angled NE & NW striking. FeOx on fracture, schistosity, and fault faces. 10 ppb Au
OM-3	T29N,R18W, Sec. 31	1500 FNL 100 FEL	Xgneiss, shattered hanging wall to OMdf, along face next to wash, with orange-brown to red hematite FeOx. 5 ppb Au
OM-4	T29N,R18W, Sec. 31	1100 FNL 1900 FWL	Xgneiss in shattered hanging wall of OMdf, 30' cut along top of bench, with red FeOx seams in yellow-brown-orange FeOx stained fracture-masses. less than 5 ppb Au
OM-5	T28N,R19W, Sec. 3	1650 FNL 1100 FEL	Xgneiss in hanging wall of OMdf, color zone, with weak yellow brown FeOx on fractures, scree cover. 22 ppb Au

AUG-02-1991 10:58 FROM AMER. ASSAY LABS-RENO

TO

16027923934

PRELIMINARY REPORT

Assay Values, ppb gold

Owens Mine Area, 1991

Samples

REPORT : SP 012841

Page 1 of 1

Sample	Au ppb	Au(E) ppb
OM-1	23	
OM-2	10	
OM-3	5	
OM-4	<5	
OM-5	22	

GOLD BASIN PROJECT EXPLANATION

QUATERNARY

Qal Alluvium and unconsolidated sediments

Qgo Older gravels

LATE TERTIARY

Tml Hualpai limestone - limestone interbedded with claystone, mudstone and siltstone

Tmb Basalt

Tmf Fanglomerate - fanglomerate interbedded with sandstone, siltstone and conglomerate

Tmfbx Precambrian-clast monolithologic sedimentary breccia within fanglomerate in SE 1/4 GARNET MTN QUADRANGLE

SUB-HORIZONTAL TO GENTLY DIPPING UNITS

UNCONFORMITY

STRUCTURALLY ROTATED AND STEEPLY DIPPING UNITS

TERTIARY

Tl Lamprophyre dikes and sills

Tv Volcanic rocks - dominantly andesite

Ts Tuffaceous sedimentary rocks and fanglomerate

Tf Fanglomerate - coarse fanglomerate deposits

Tfrt White rhyolitic tuff interbedded with fanglomerate

STRUCTURALLY ROTATED AND STEEPLY DIPPING UNITS

STRUCTURAL DISLOCATION SURFACE

CRETACEOUS

Km Two-mica monzogranite

Kam Alaskite altered monzogranite

PALEOZOIC

Ct Cambrian sedimentary rocks - only along east edge of GARNET MTN QUADRANGLE

UNCONFORMITY

MIDDLE PROTEROZOIC

db Diabase

EARLY PROTEROZOIC

Xgr Granite - undifferentiated

Xpm Porphyritic monzogranite

Xbm Biotite monzogranite

Xlm Leucocratic monzogranite

Xgc Granodiorite complex - composit unit including granodiorite and monzogranite

Xgd Granodiorite

Xgg Gneissic granodiorite

Xl Leucogranite - coarse grained to pegmatic leucogranite, aplite and pegmatites

Xfg Feldspar gneiss

Xs Metasedimentary rocks

Xgn Gneiss

Xam Amphibolite

Xmg Migmatitic gneiss - dominantly gneiss intruded by monzogranite and granodiorite

Xm Migmatite - dominantly monzogranite complexly intruded into gneiss

(E) Episyenite

Diffuse, non-vein mineralization

Vein (showing dominant minerals, dominant gangue minerals and age T-tertiary, K-cretaceous PC-precambrian)

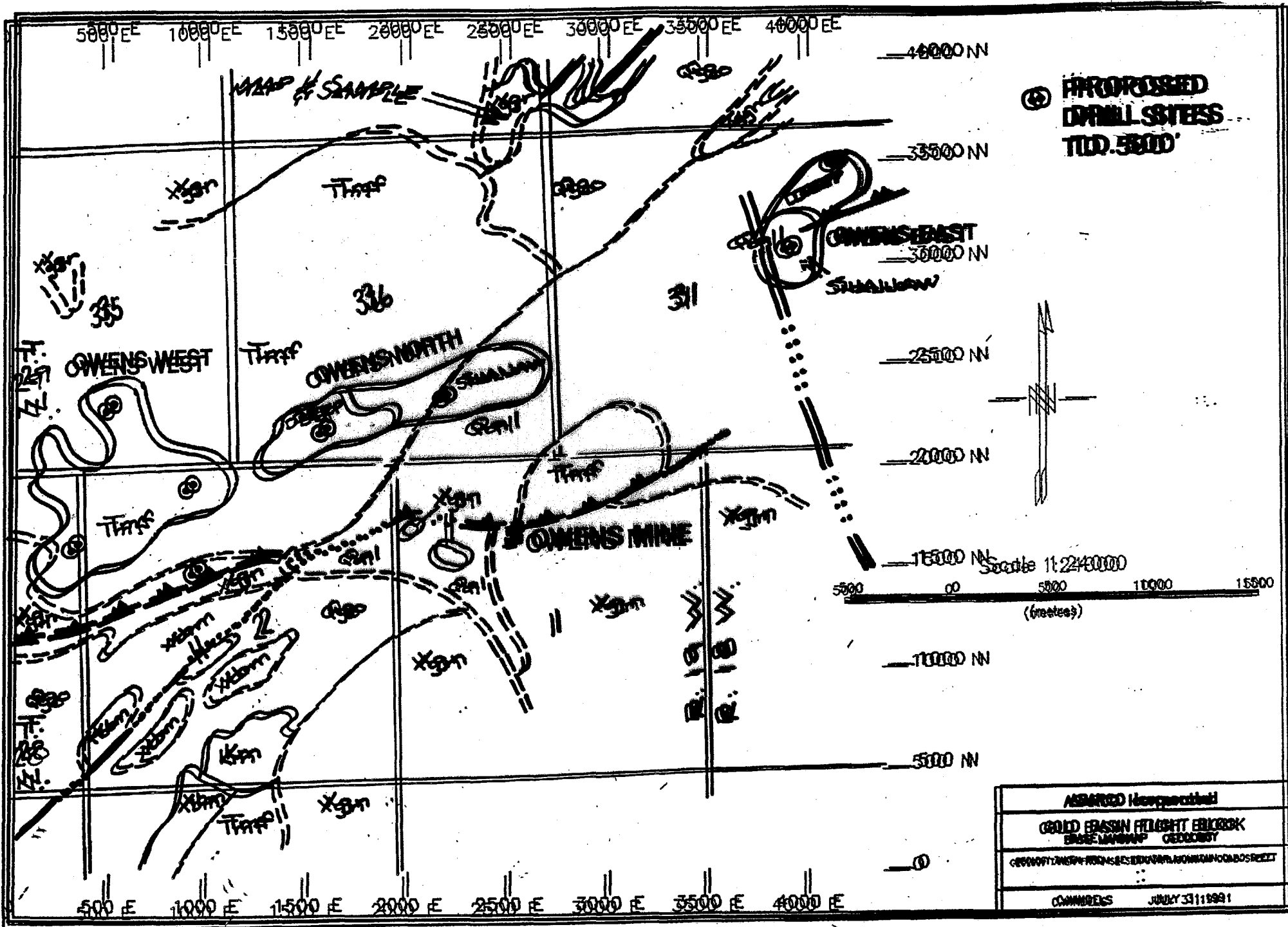
(P) Gold placer deposit

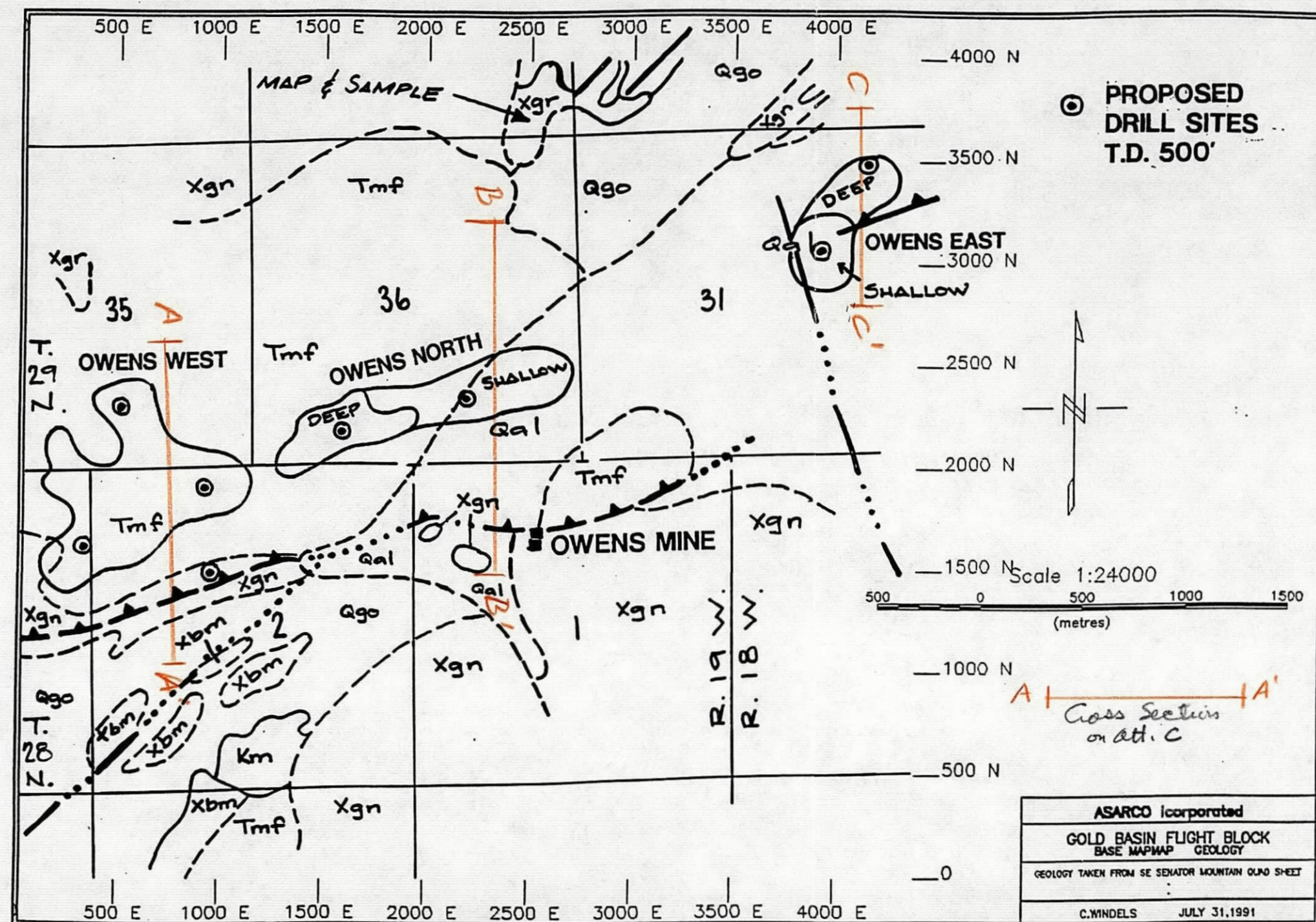
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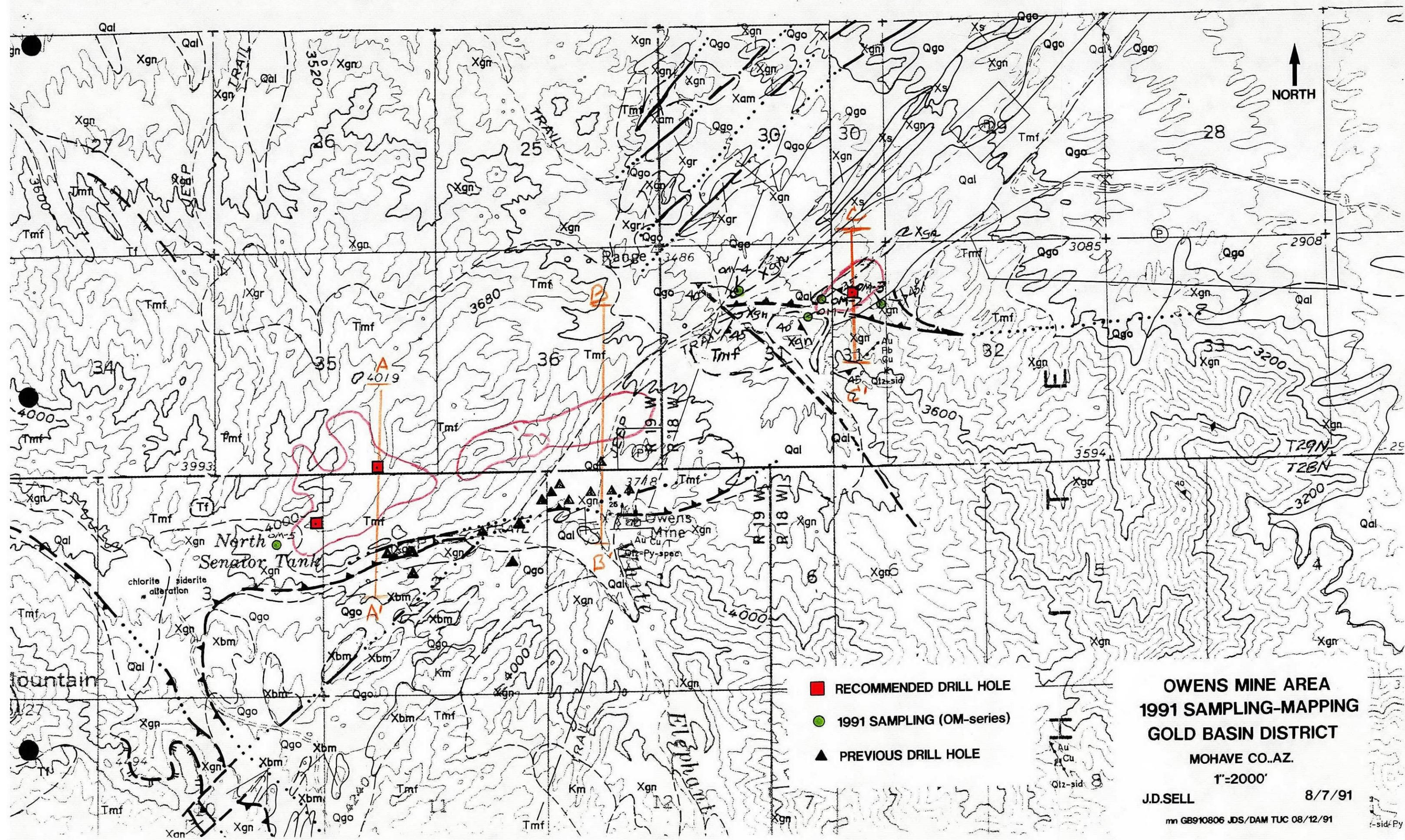
High angled fault

Detachment fault - hachures on upper plate

Detachment fault - teeth on base of middle plate







OWENS MINE AREA
1991 SAMPLING-MAPPING
GOLD BASIN DISTRICT
MOHAVE CO., AZ.

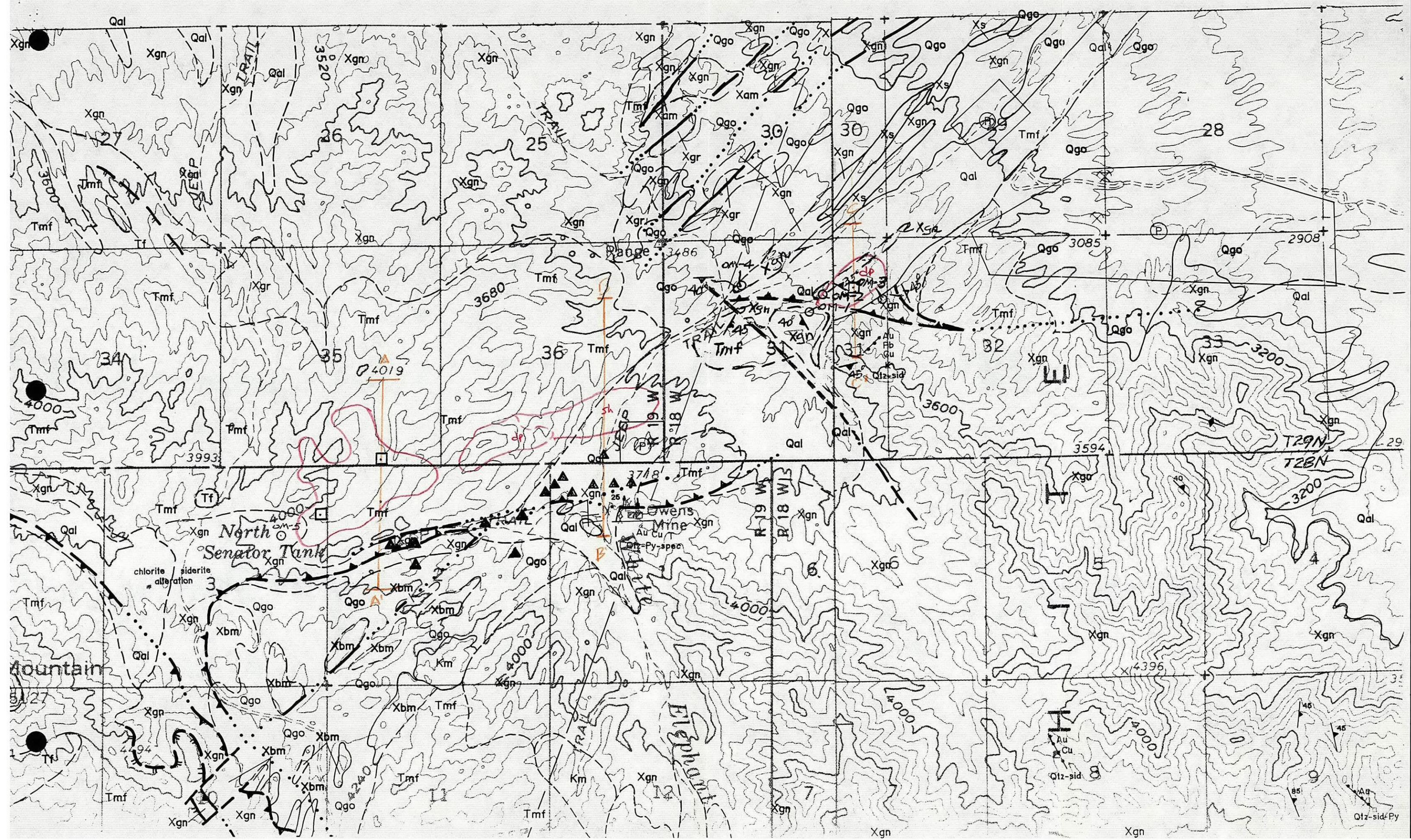
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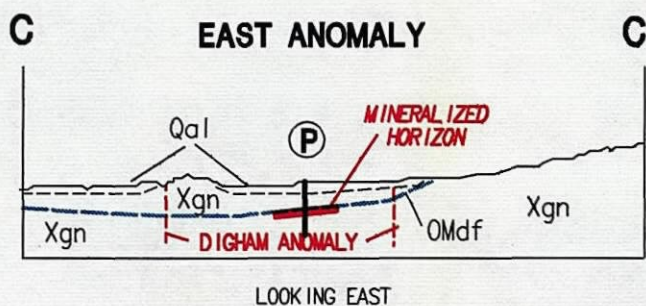
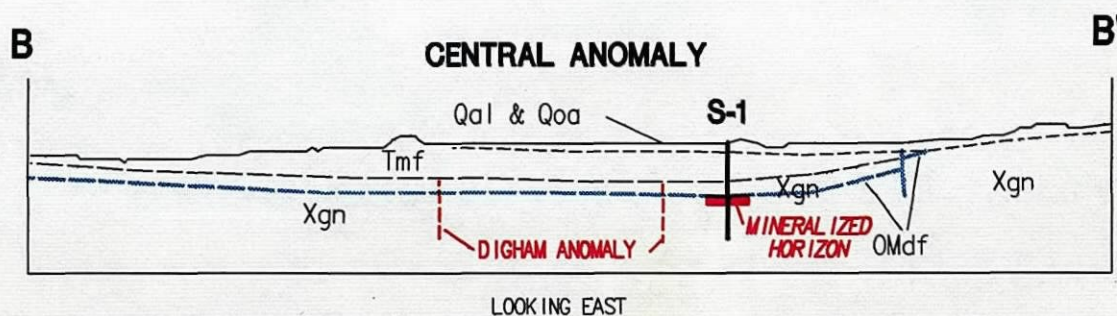
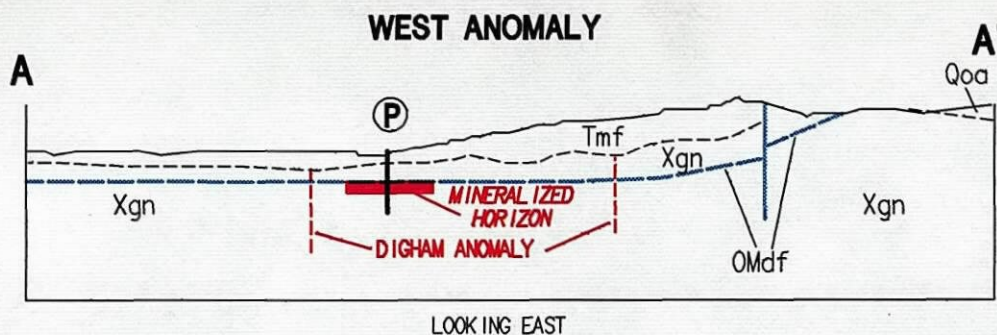
J.D.SELL

8/7/91

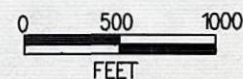
mn GB910806 JDS/DAM TUC 08/12/91

-sid-Py





- OMdf OWENS MINE DETACHMENT FAULT
- (P) PROPOSED DRILL HOLE
- S-1 PREVIOUSLY DRILLED HOLE



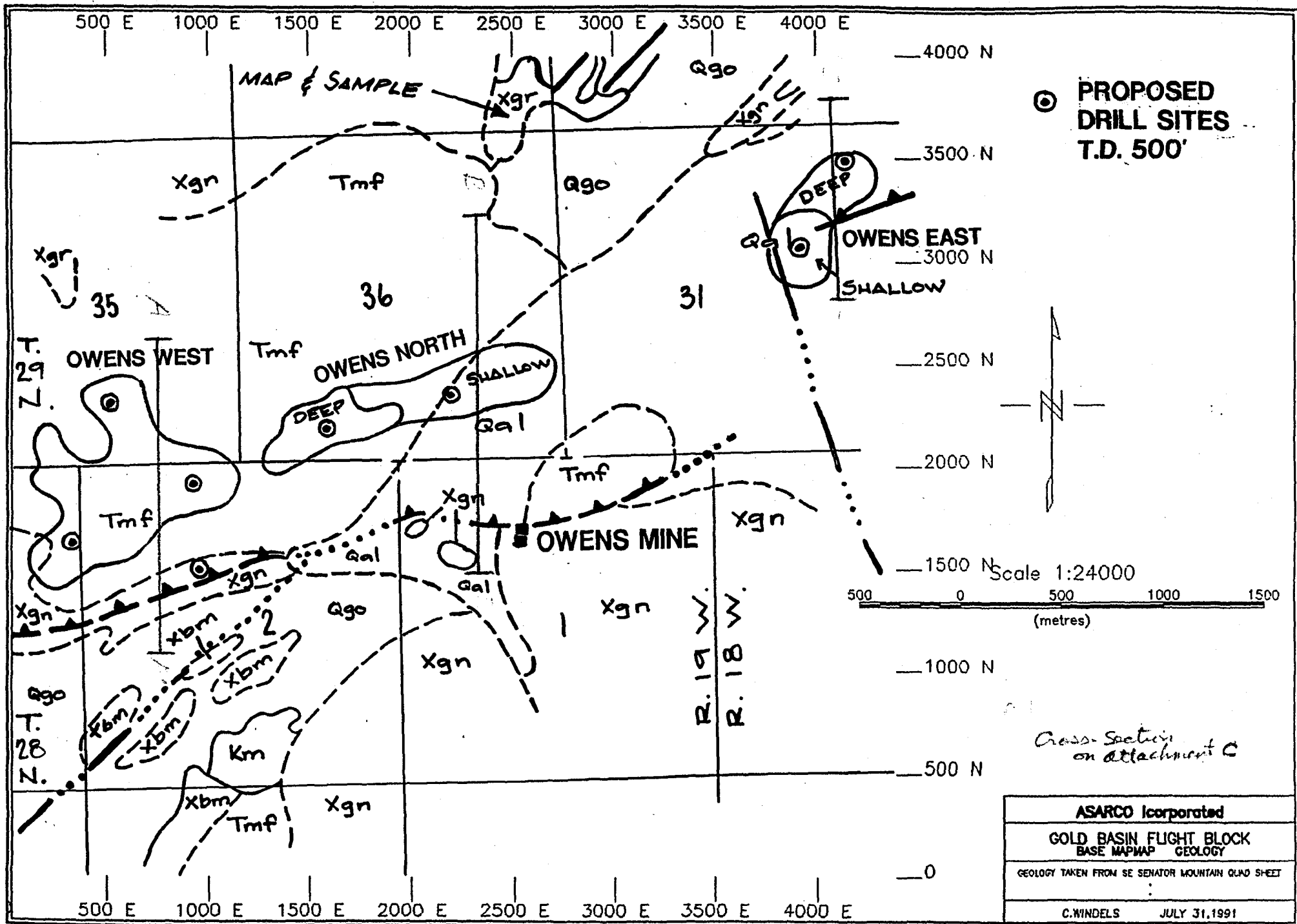
GOLD BASIN PROJECT OWENS MINE AREA SECTIONS THRU THE EAST, CENTRAL & WEST TARGETS

J.D.SELL

mn GB910806 JDS/DAM TUC 08/15/91
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SP5-7/.7
SP7/.25

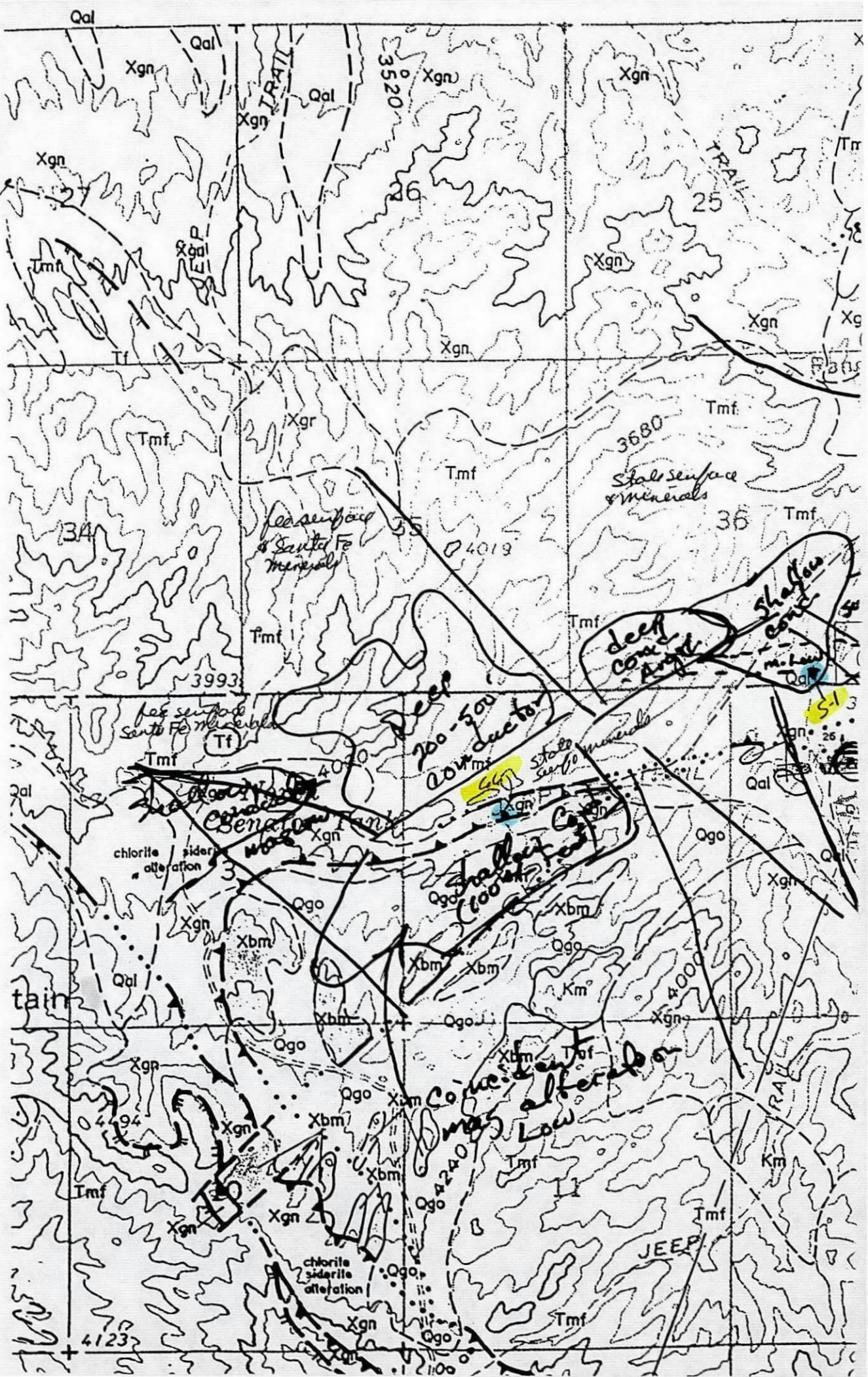
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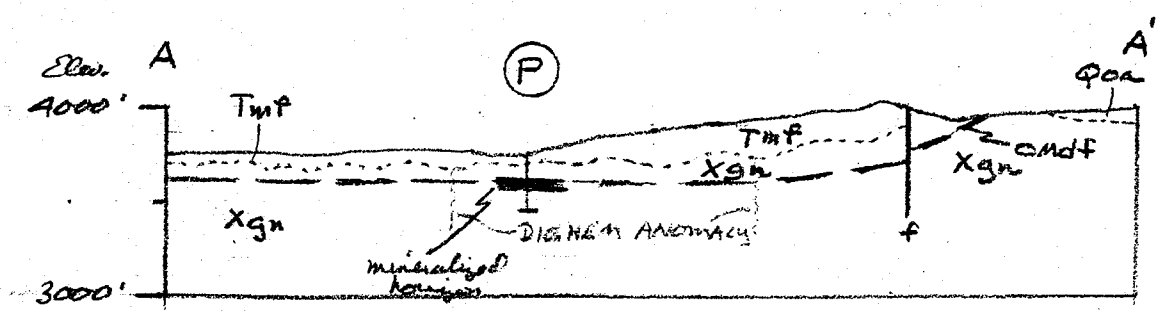
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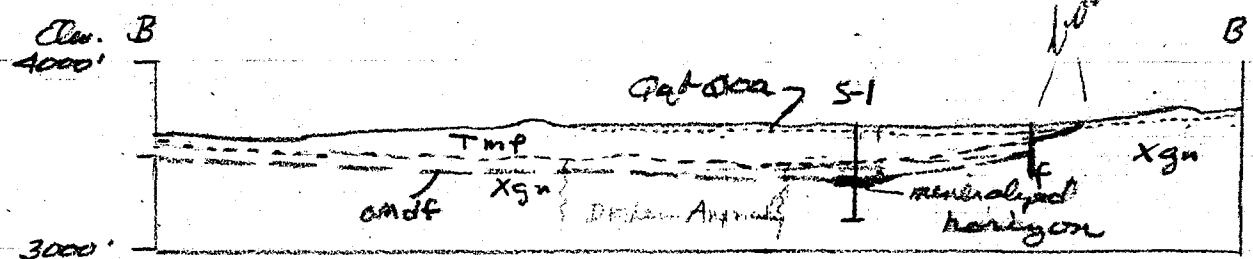
ASARCO Incorporated	
GOLD BASIN FLIGHT BLOCK	
BASE MAP MAP GEOLOGY	
GEOLOGY TAKEN FROM SE SENATOR MOUNTAIN QUAD SHEET	
C. WINDLS	JULY 31, 1991

SCALE
1:24,000

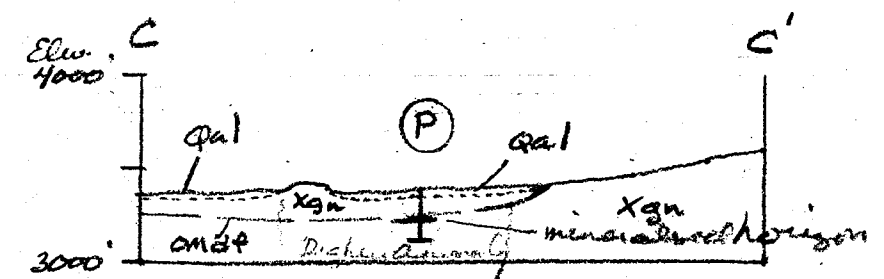




Section A-A' Owens West Anomaly
Looking East



Section B-B' Owens Central Anomaly
Looking East

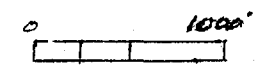


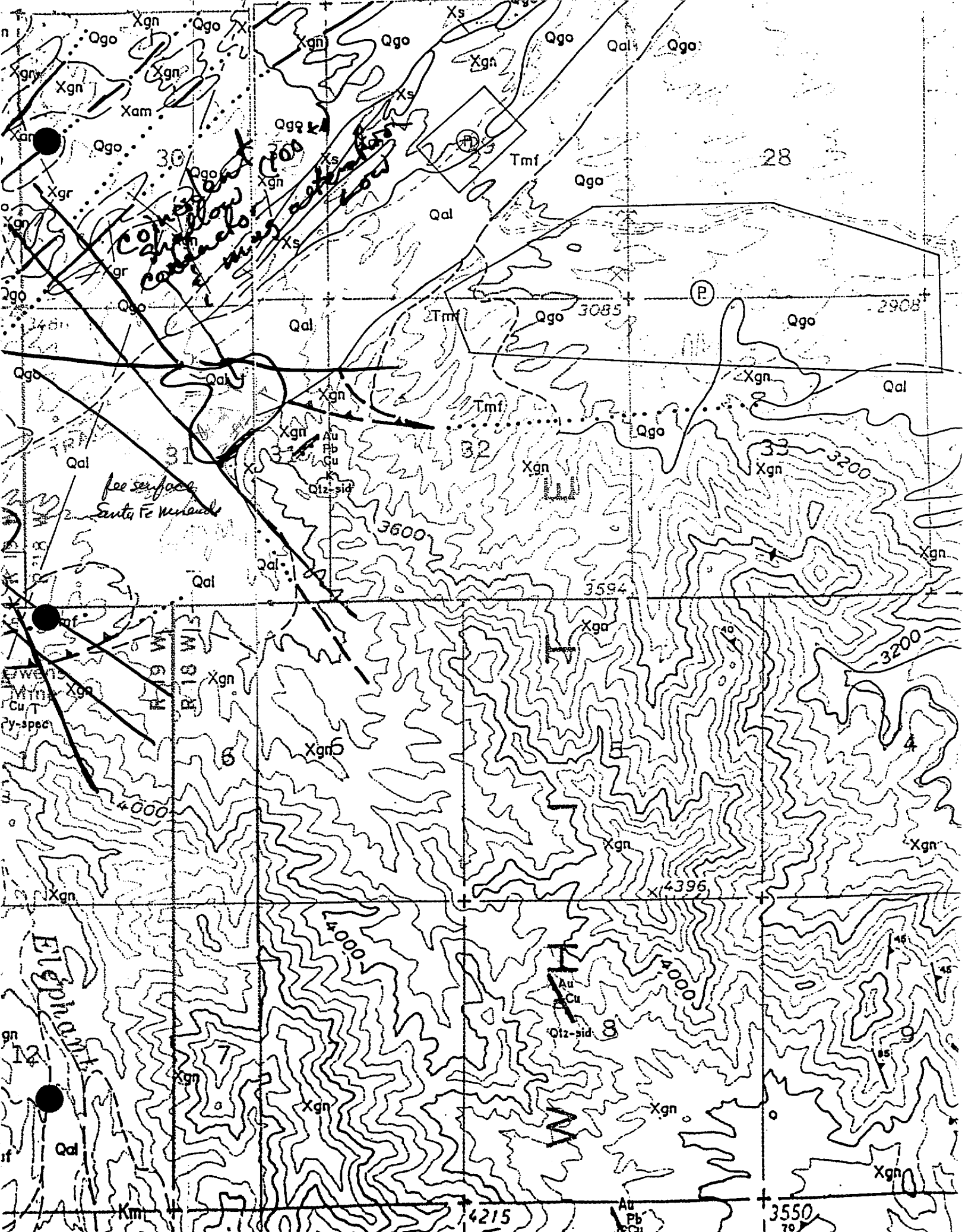
Section C-C' Owens East Anomaly
Looking East

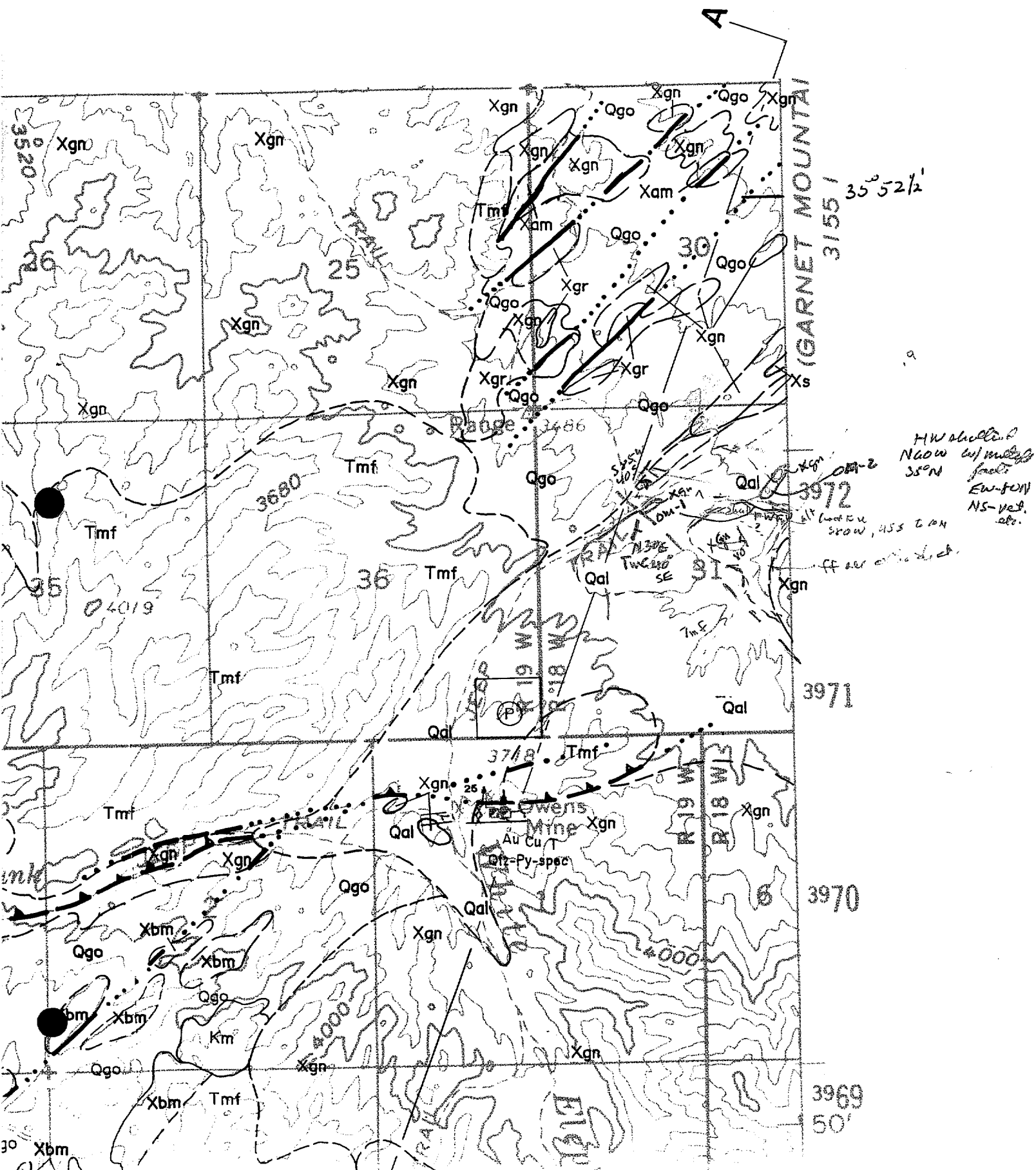
- Omdf Owensmine Detachment Fault
- (P) Proposed drill hole
- S-1 Previously drilled hole

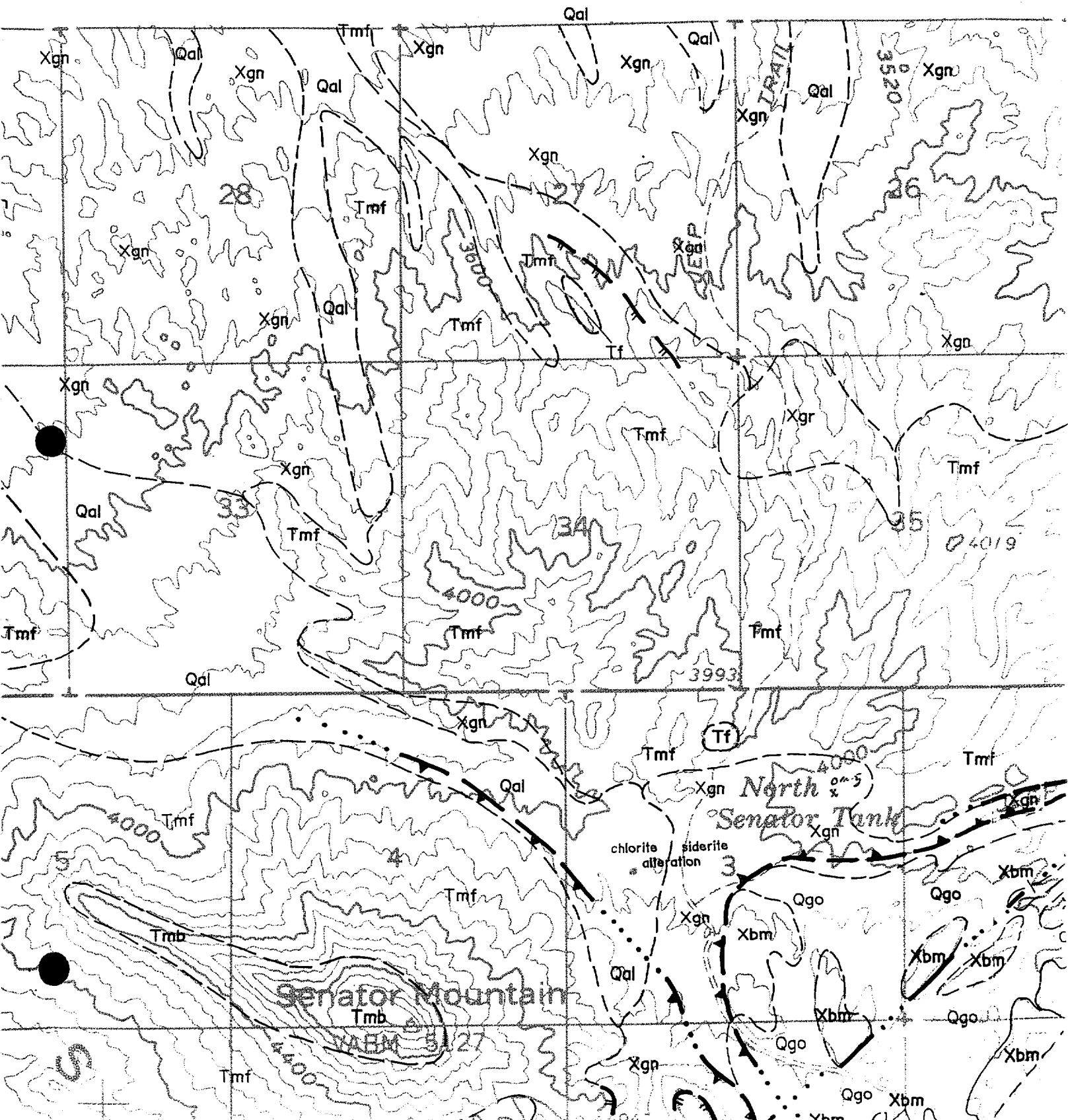
Note for Don
both faults at base of Qal-Qgn covers over to B' edge

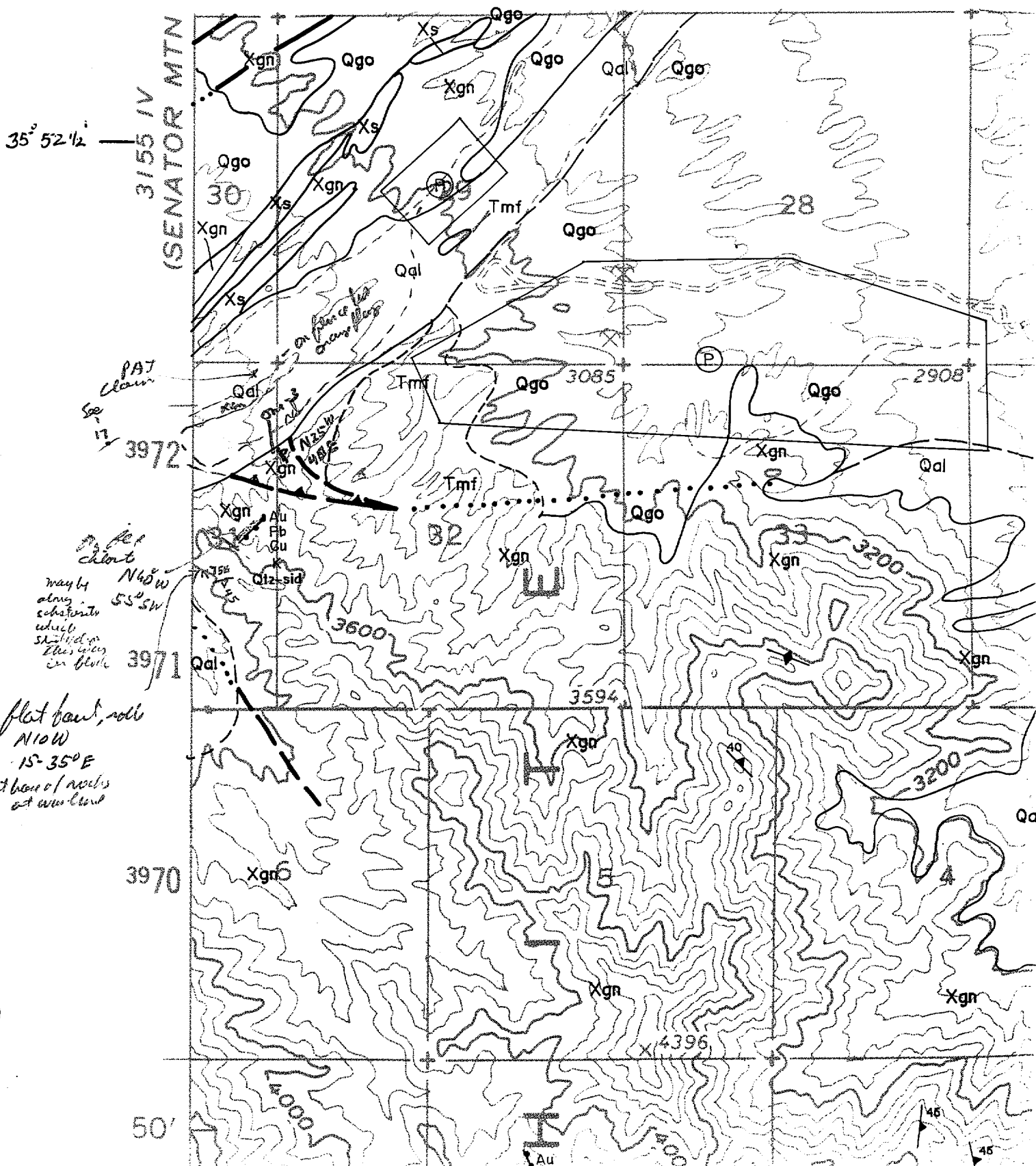
Cross-Sections
Owens Mine Area
thru
East, Central, & West Targets

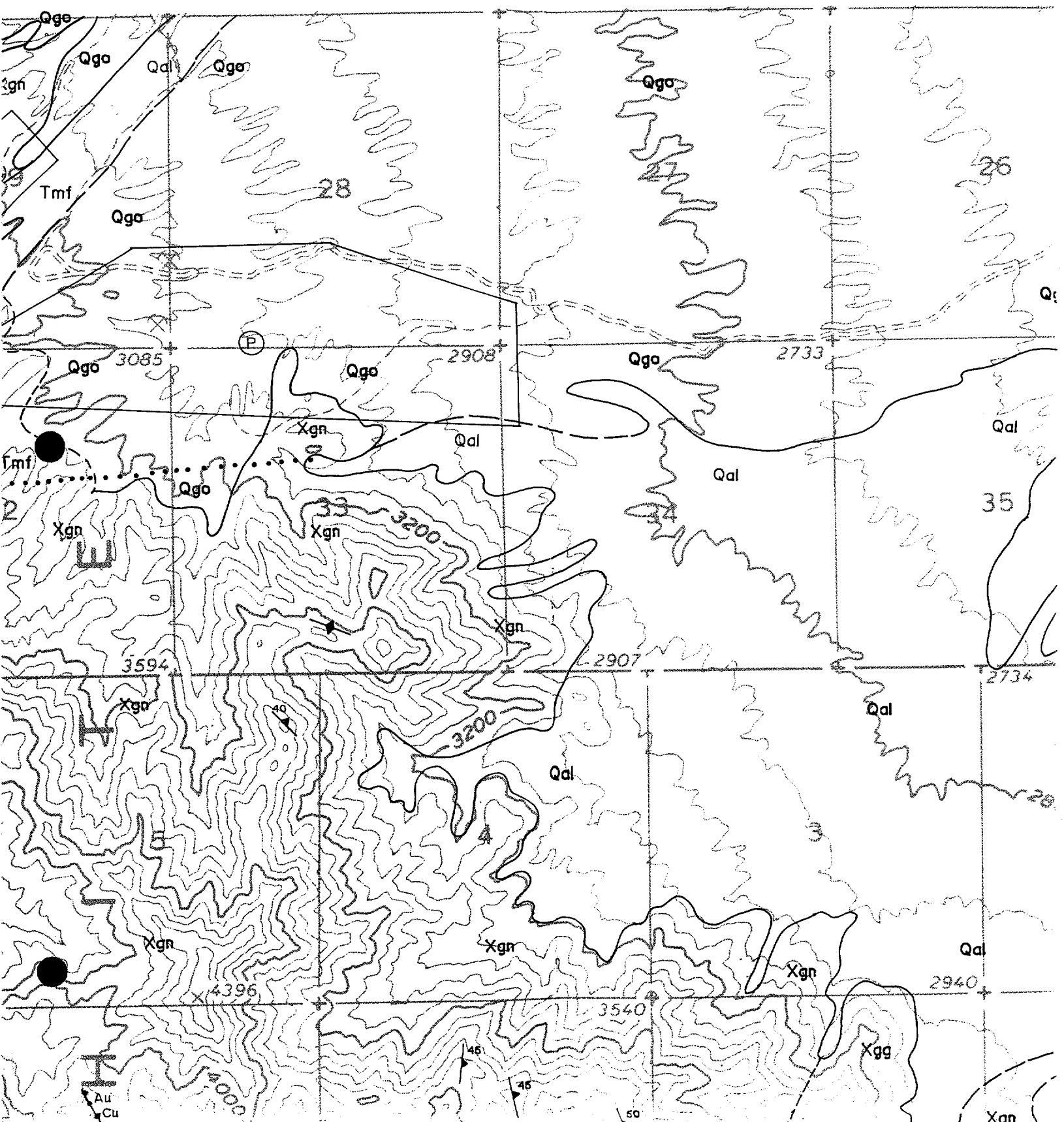


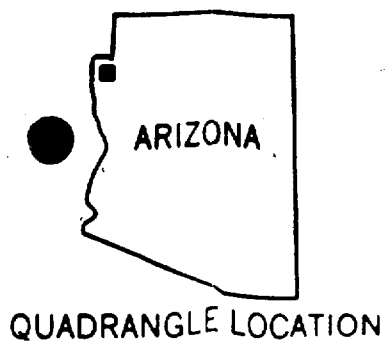
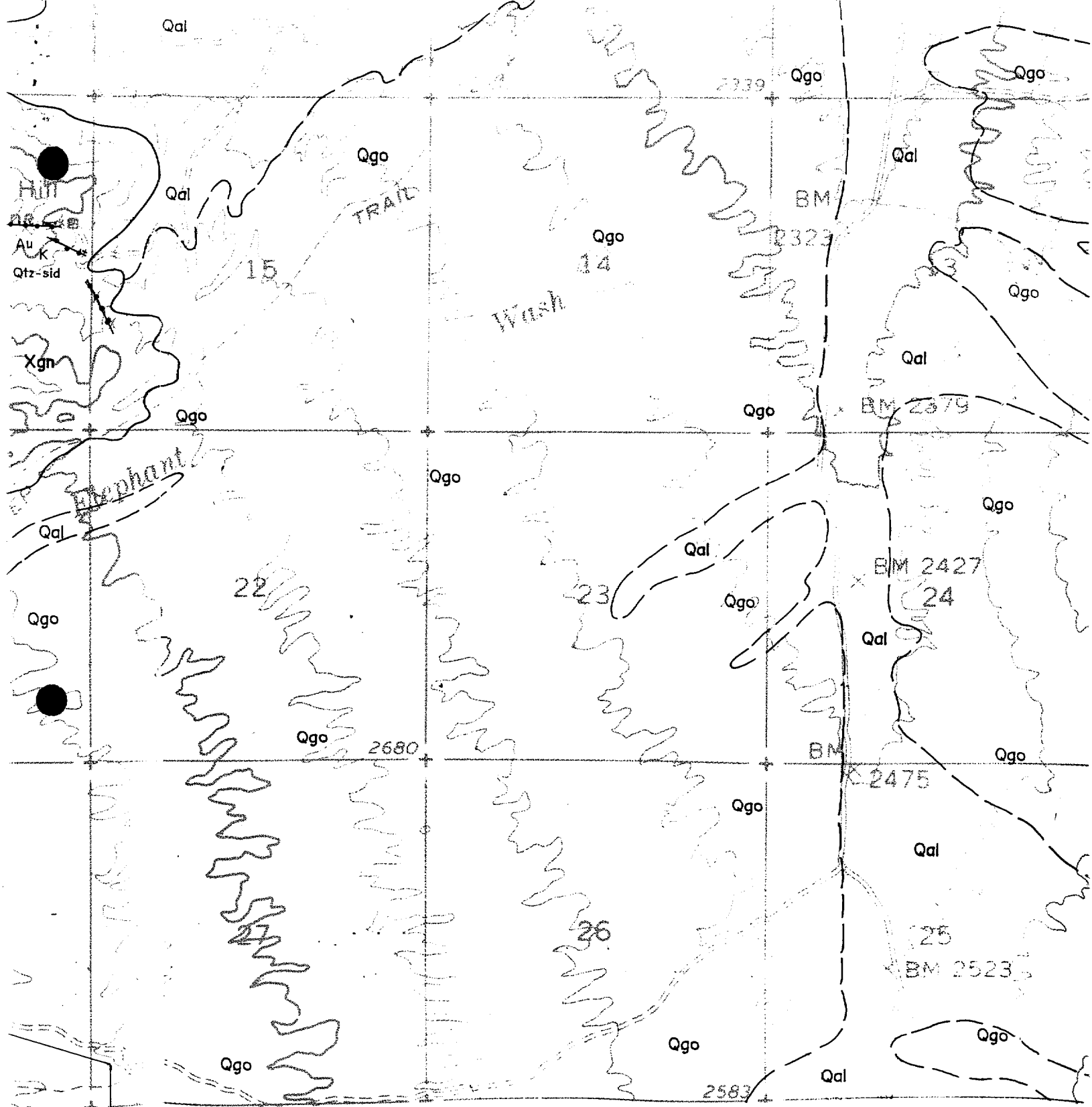




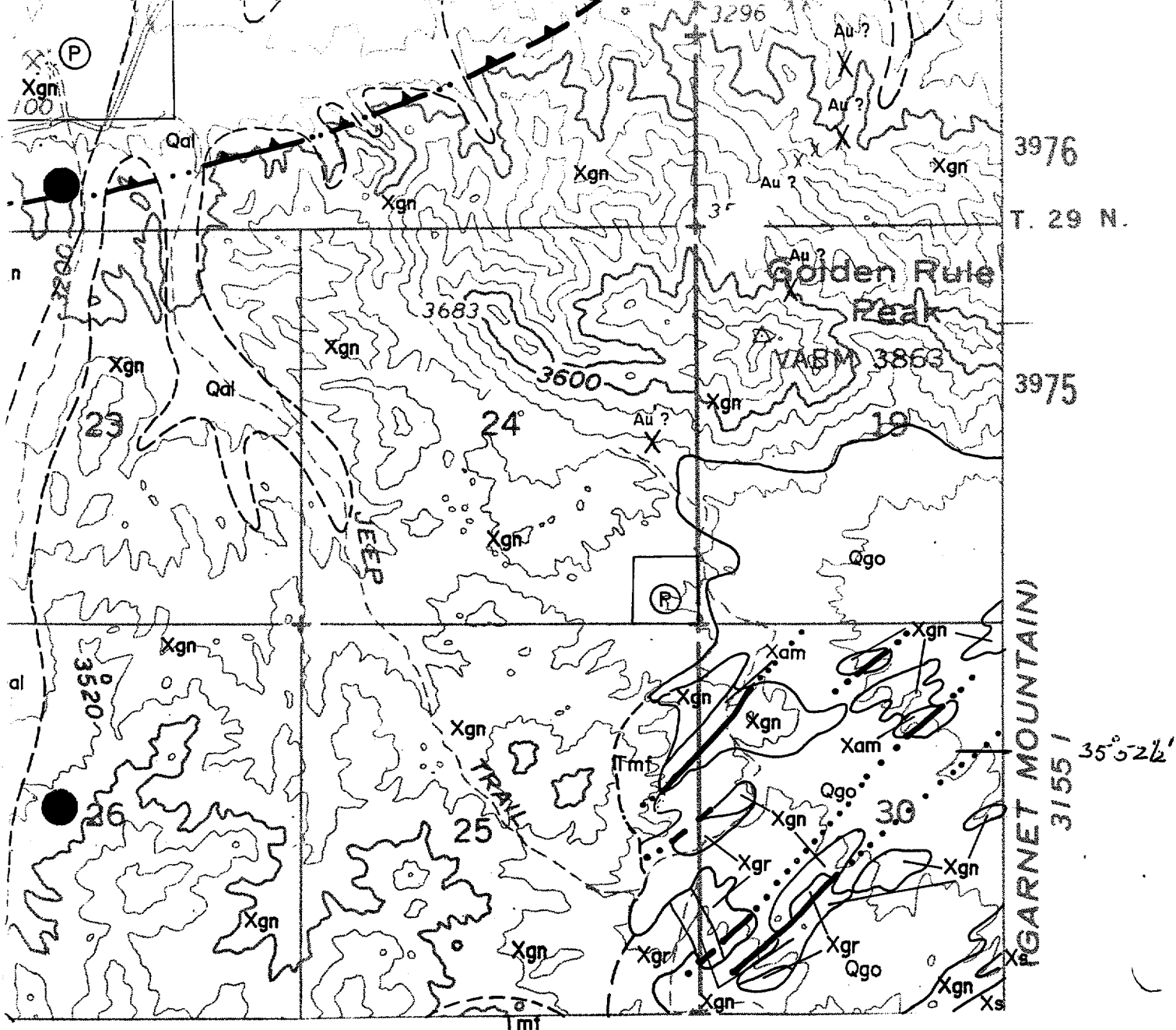








Light



mn GB910503 RMC/DAM TUC 05/07/91

ROAD CLASSIFICATION

Medium-duty



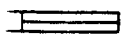
Light-duty



Unimproved dirt =====

4 MILES

21000 FEET

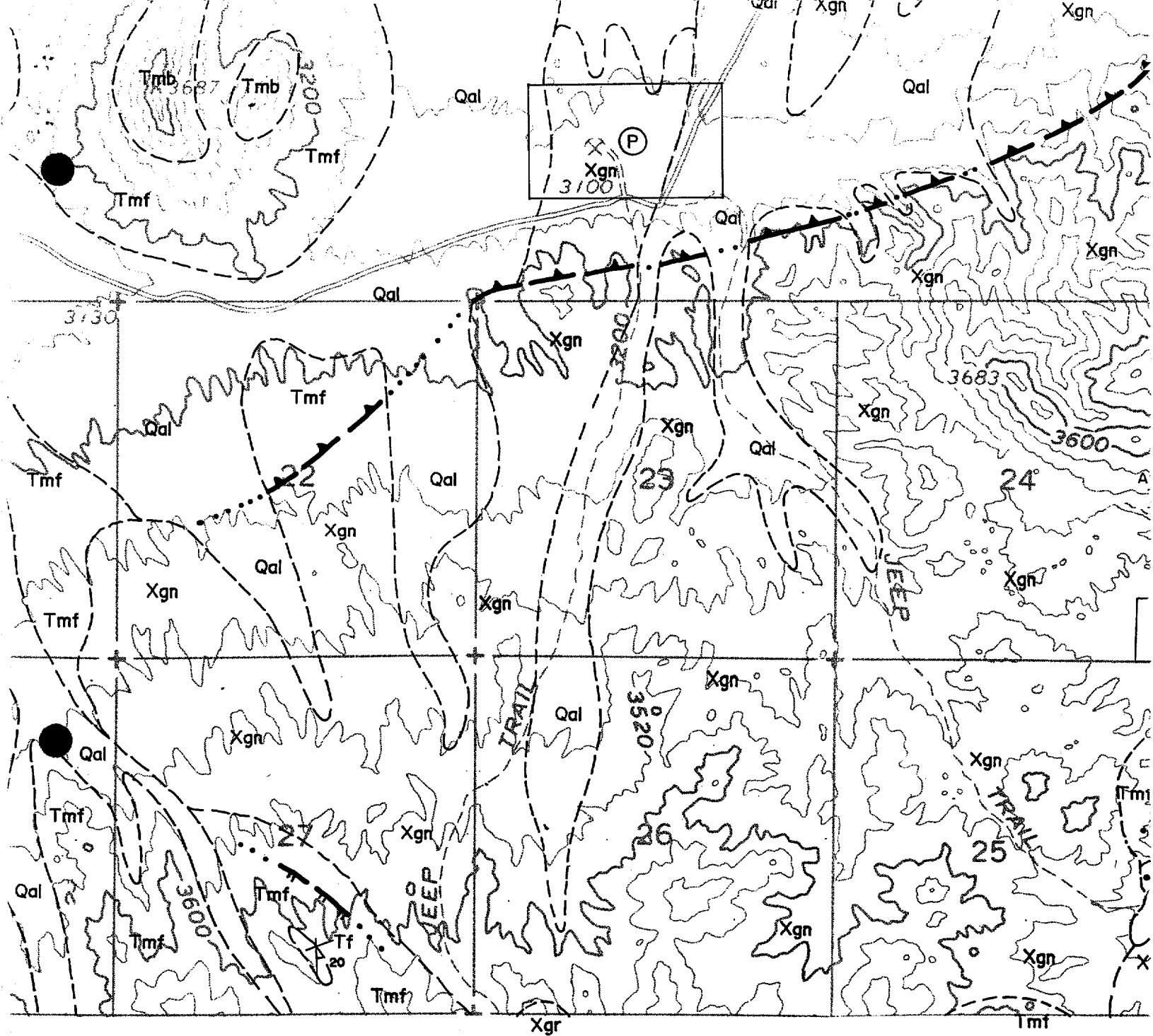


METERS

NORTHEAST

SENATOR MOUNTAIN, ARIZ.

N3545—W11415/15



mn G

ROAD CLASSI

Medium-duty

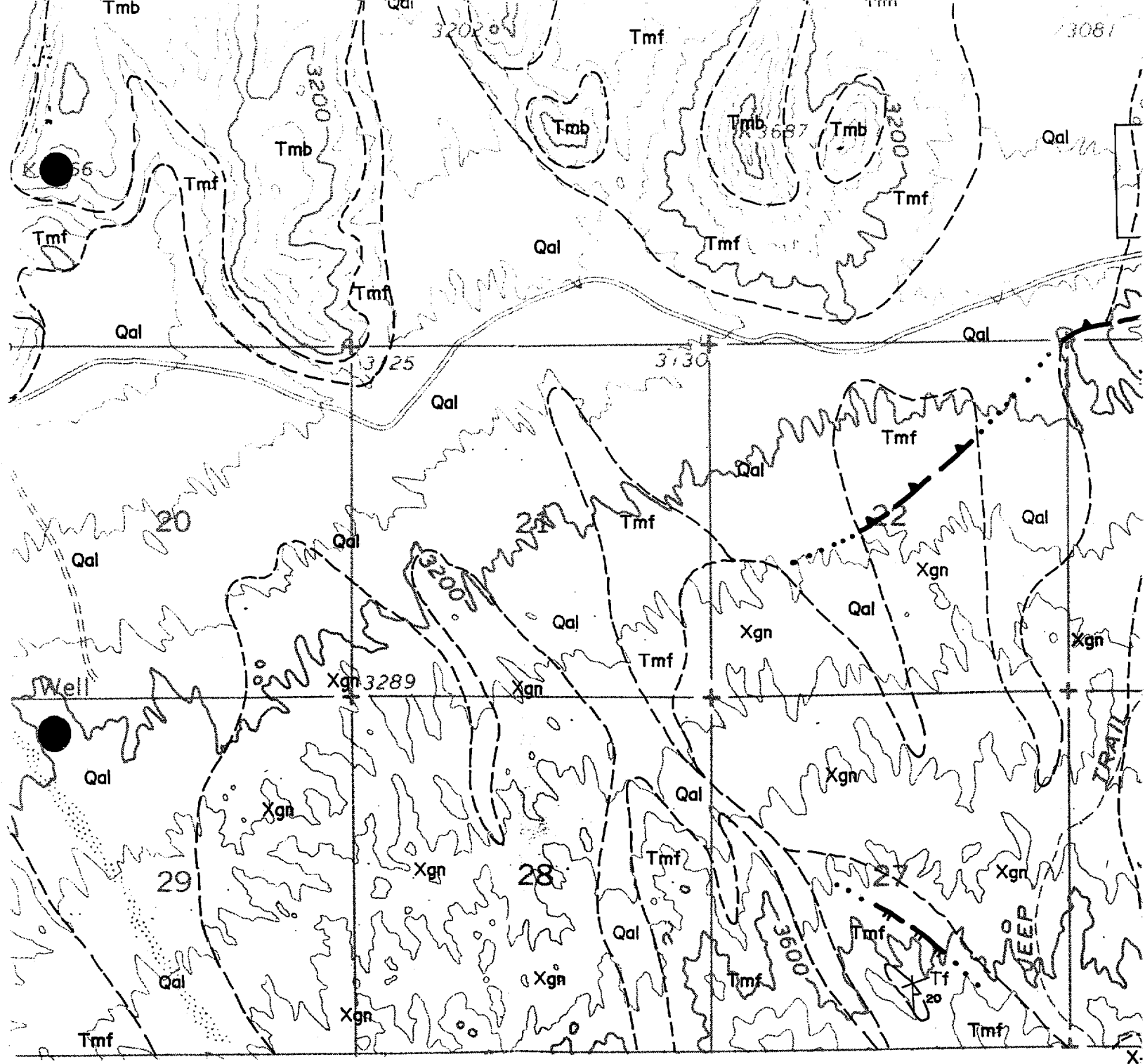
Unimproved dirt

3

4 MILES

N

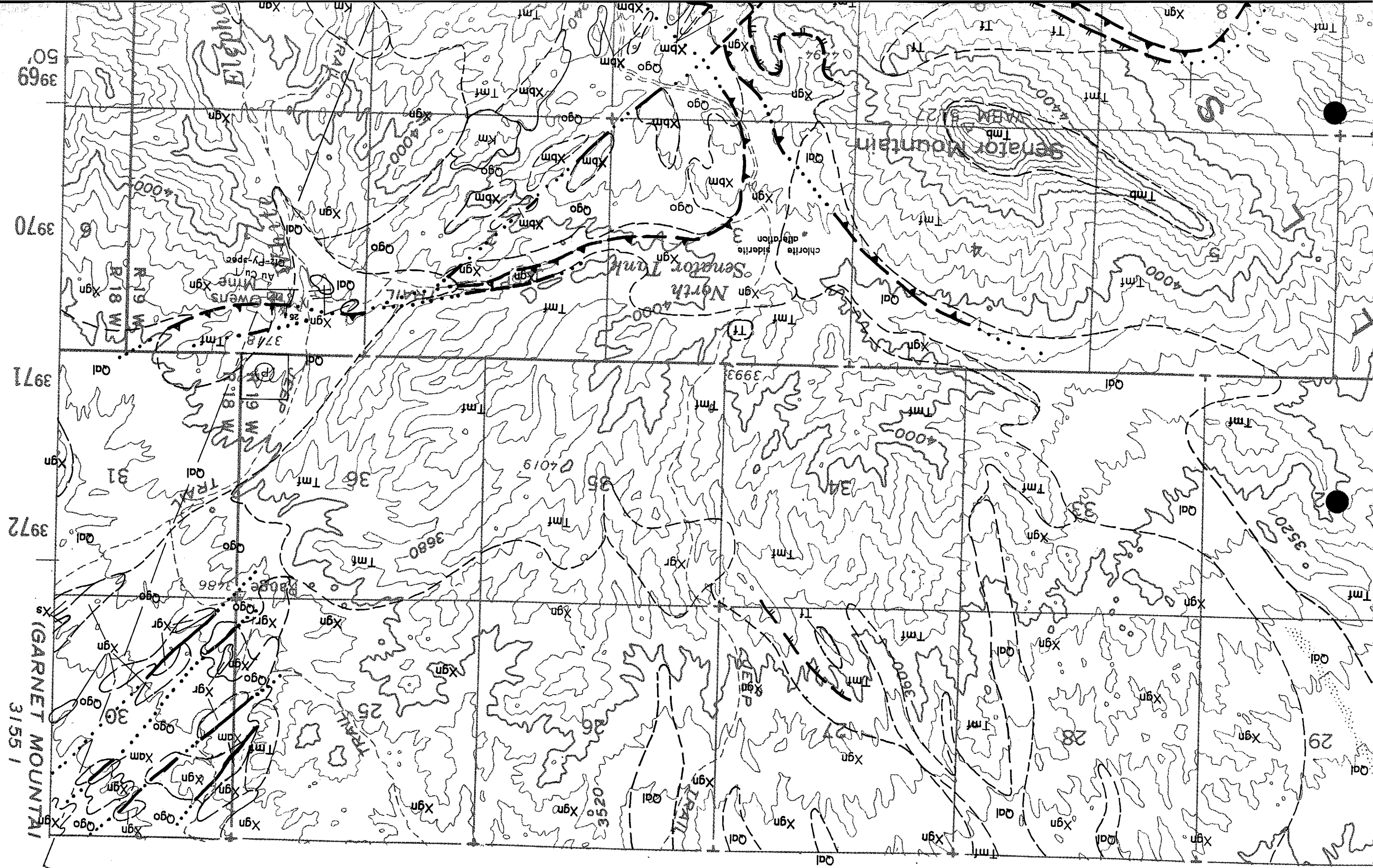
SENATOR N



ARIZONA

QUADRANGLE LOCATION

SCALE 1:



ASARCO

8/91 JDS
Southwestern Exploration Division

August 28, 1991

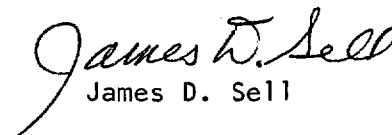
FILE NOTE

ACNC Drill Results
Owens Mine Area
Gold Basin District
Mohave County, AZ

I send to the Files, Mr. Russell M. Corn's synopsis of the ACNC drill results from five holes in Section 2, and two holes in Section 10, T28N, R19W (attached).

The file copy also contains the two ACNC reports of February and June 1987 on the drilling, the logs, and assays from the seven holes.

JDS:mek
Att.


James D. Sell

cc: W.L. Kurtz (w/synopsis)

RUSSELL M. CORN

Registered Geologist

8425 DESERT STEPPES DR.

TUCSON, ARIZONA 85710

PHONE 602 - 298-1770

March 21, 1991

James D. Sell
Manager, Southwestern Exploration
ASARCO, Inc.
P.O. Box 5747
Tucson, AZ 85703

Re: ACNC Drill Results
Owens Mine Area
Gold Basin Dist., Mohave Co., AZ

Attached is a copy of American Copper and Nickel's drill hole data for five drill holes located along the Detachment Fault Zone $\frac{1}{2}$ to 1 miles west of the Owens Mine and two drill holes located along the Fault Zone approximately one mile northwest of the Senator Mine. The drill holes were positioned in the lower part of the Detachment Fault Zone, tested extensive surface gold anomalies, and show a general pattern of weak gold values that diminish with increasing depth. The more intensely sheared, upper part of the Detachment Fault Zone is concealed by fanglomerate and gravel and was not tested by any of ACNC's drill holes. Mapco's prior drilling at the Owens Mine indicated a resource of 385,000 tons @ .026 oz Au/T.

The Owens prospect was acquired by ACNC in 1985 as part of a joint venture with Nerco who had earlier acquired the property through their acquisition of Mapco's mineral properties. After completion of the 1987 drilling program, ACNC terminated the joint venture agreement on the prospect. *

Surface geologic and geochemical investigations and previous drilling by Mapco outlined a large area of anomalous gold values (50 to 500 ppb) at the edge of gravel cover west of the Owens Mine. In 1985, ACNC drilled two holes (72887 and 72888) in the near vicinity of a tight cluster of four reportedly barren holes drilled earlier (1984) by Mapco, and in 1987, ACNC drilled three holes testing the eastern end of the anomaly (76001, 76002, and 76003). In general the drill holes intersected extensive weak gold values (76001 - 158 ft @ .15 ppm Au) that diminished with increasing depth. Higher gold values are described as related to zones of more intense shearing and ACNC's data suggests some high angle fault offset of the low-angle Detachment Fault Zone.

ACNC drilled two holes, 72889 and 72890, in the lower part of the Detachment Fault Zone approximately one mile northwest of the Senator Mine. The holes were located near surface gold anomalies at the base of the steep slope cut on the fault zone. They encountered sheared granite and gneiss with near-surface values of .005 to .01 oz Au/T that diminished with increasing depth.

The ACNC drill results indicate that extensive weak gold mineralization is associated with the Detachment Fault near Senator Mountain and the Owens Mine. ACNC's drilling did not test the upper, more intensely sheared, concealed part of the Detachment Fault Zone where higher-grade mineralization could be anticipated.

* Lahr, M. & Morris, S., Feb. 1987, Owens Property report.

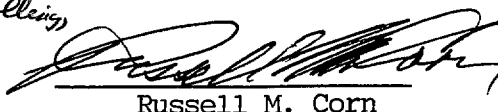
Drill holes 72887, 72888, 72889, 72890

Respectfully Submitted,

Morris, S., June 1987, Results of 1987 Drilling,

Owens Project report. Drill holes

76001, 76002, 76003.



Russell M. Corn

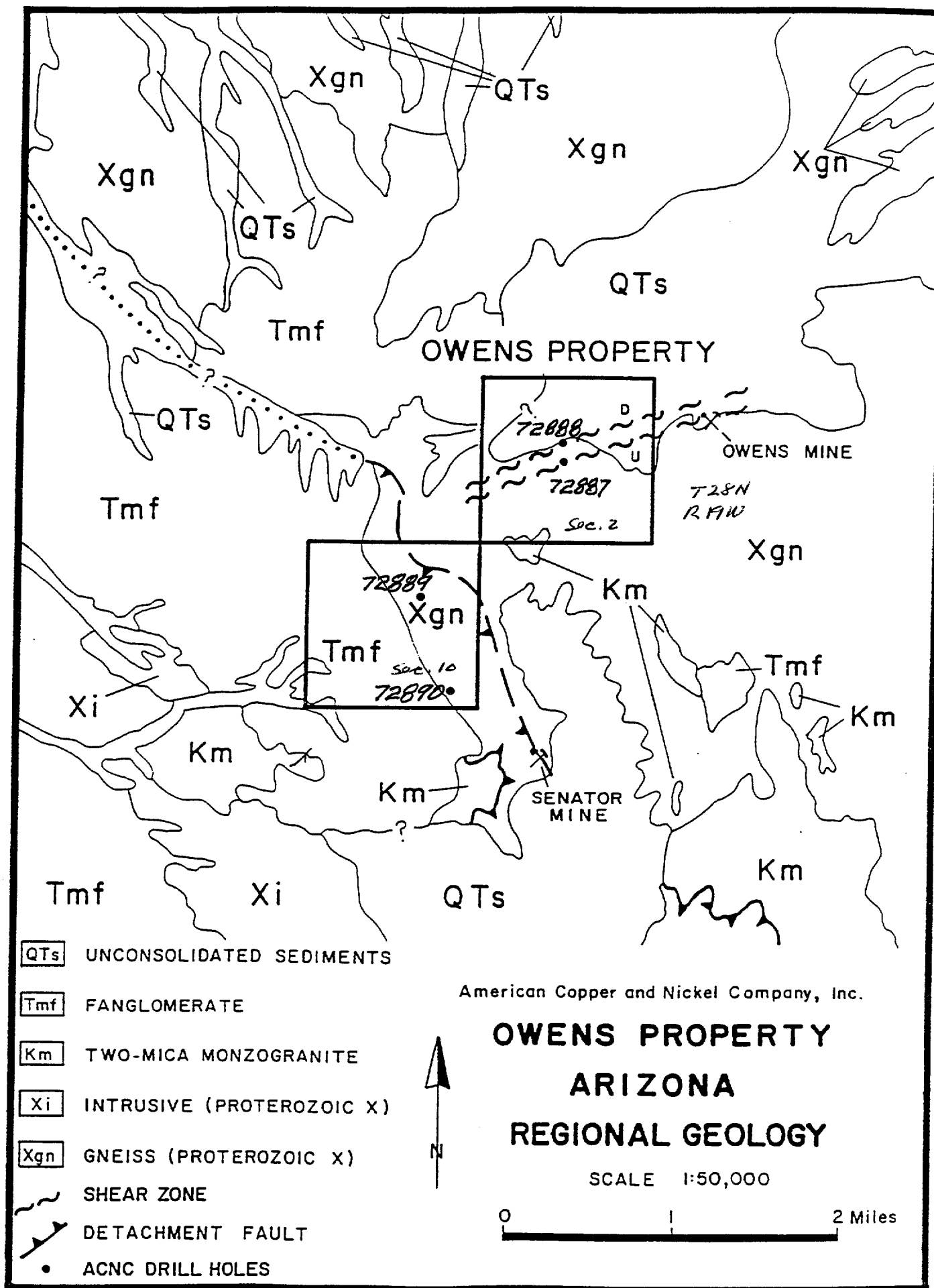


Figure 2.

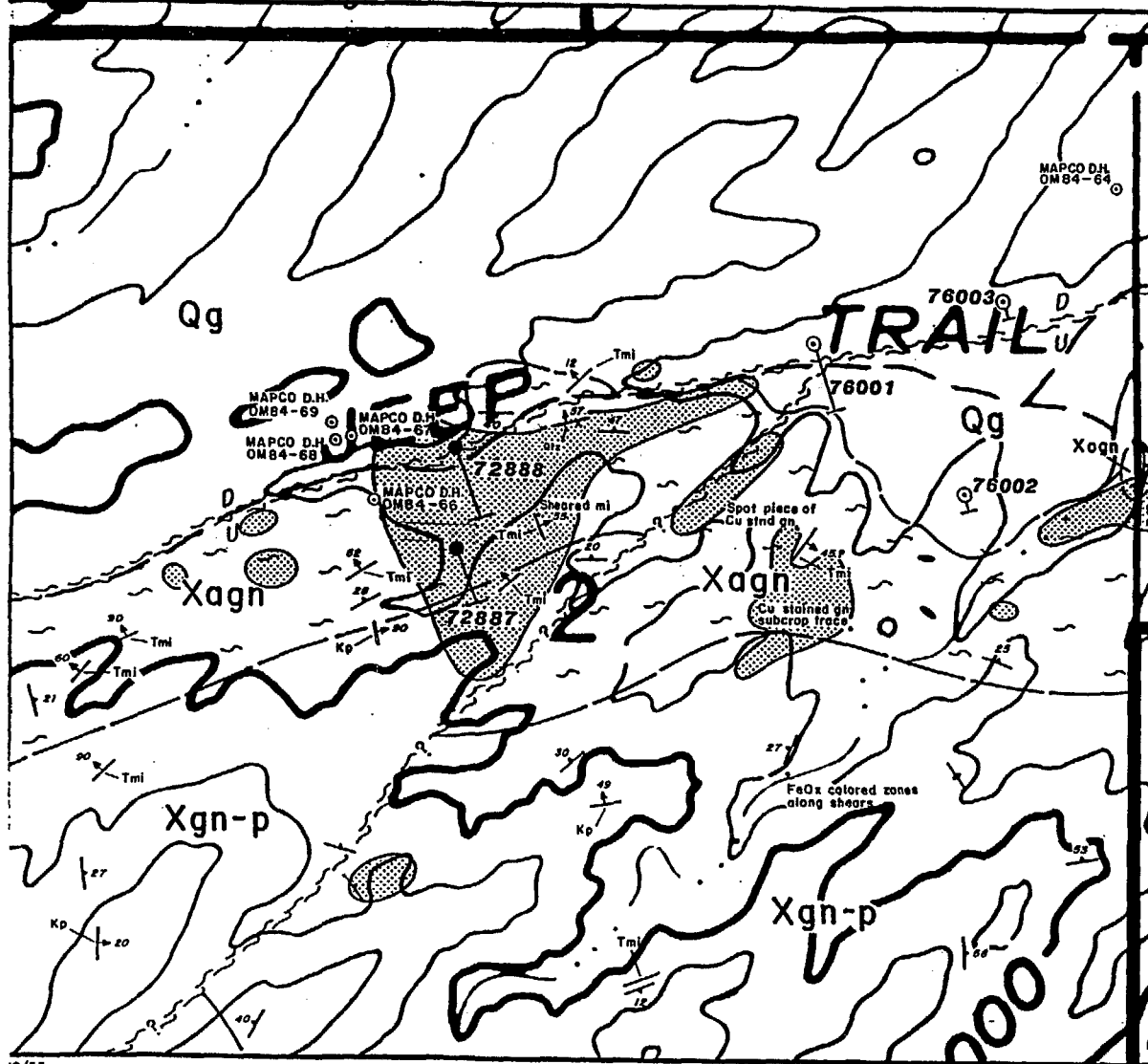
American Copper and Nickel Company, Inc.
ACNC - NDCO

SECTION 2. DRILL HOLE LOCATIONS

Owens Mine Property
Mohave County, Arizona

- ⊙ 1987 Drill hole location
- 1985 Drill hole location
- ⊙ Gold in soil anomalies >50 ppb

For explanation of geology, please refer to
Plate 1, "Geology of the Owens Mine Property."



Figure

Queens revisit of Sell

JDS
please review
these two pages

W.L. KURTZ

Attached is poss C — — — — —

Previous

Closed spaced drilling at the Queens Mine indicates a geologic reserve of 825 — in a detachment fault zone and also indicates weakly anomalous gold for a mile west of the Queens Mine.

Corn believes the ~~previous~~ mineralized detachment zone ~~is within~~ exists ~~at~~ within 100 to 300 feet of the ~~surface~~ is present beneath pit mineral cover for a mile to a mile and a half west of the Queens Mine, ^{probably only 100-300' deep} and should be tested by drilling.

Corn also points out, and I agree, that a better geologic map would help in interpreting the AEM survey that has been completed. ~~and the~~ I plan to do this and then consult with Windels to make a final determination if drill targets exist.

^{permissive}
As noted by Corn much of the land is ~~the~~ State owned or owned by Santa Fe Minerals. ~~and~~

No Type
OWENS MIXIE

JD Sell
7/8

You need to make Corn's maps easier to read by liberal use of a magic marker (I've done some, not all, on attached copy)

① Land map - hard as hell to read; as minimum need to show State Land (surface + mineral if different); Santa Fe Land by some color outline; other as you see fit

② page 6 sections ought to be indicated on map in folder takes forever to locate the drill holes

③ on map seems to me ought to highlight the non anomalies / no mineral holes and maybe? highlight holes with anomalies gold

④ Sections show detachment zone outcrops to north but plan map doesn't. Which is right? If section correct ~~why don't we have some rock chip di~~ Russ Corn should have been smart enough to have collected a few samples.

⑤ In text would have been good to say contiguous values in drill holes 7.01 to seldom 7.30'

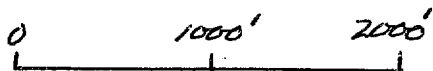
⑥ Look map p2

All maps should have title where can see when filed

7X10 fold

Geologic Map
of the
Owens Mine Area

1" = 1000'



Sec. A

A'

Sec. B

B'

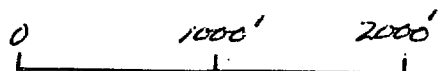
No detailed mapping
some pits & alteration

- barren
- 3' of 0.01 g/t Au
or better

7X10 fold

Geologic Map
of the
Owens Mine Area

1" = 1000'



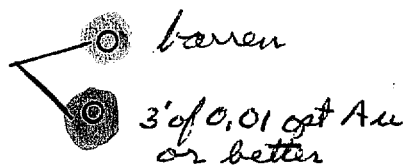
Sec. A

A'

Sec. B

B'

No detailed mapping
some pits & alteration



July 3, 1991

W.L. Kurtz

Forwarded

R.M. Corn's Report
Geology & Exploration Potential
Owens Mine Area
Gold Basin District
Mohave County, Arizona

I submit Mr. Corn's report on the subject area.

The Owens Mine area is the only zone in the district which has measureable gold values (385,000 tons at 0.026 opt gold) in the basement units below the detachment fault packet, as well as a piece of the detachment packet.

East-west high-angled faulting, subparallel to the trace of the Owens detachment fault, has complicated the interpretation as the mineral goes north under a gravel cover.

Corn has recommended continued exploration through the gravel cover to determine if a large deposit might exist in the covered detachment packet.

As the land package is complex patented and unpatented claims, Arizona State Lease, and Santa Fe Minerals, it has been recommended that further mapping and evaluation be conducted to pick out the most probable target area available.

The first step has been to fly the aeromag-resistivity survey over the area. This data is now available and awaiting the interfacing with the geological, assay, drill information.

JDS:mek

James D. Sell
James D. Sell

cc: R.L. Brown
C.O. Windels

8/91 JDS

ASARCO

Southwestern Exploration Division

August 29, 1991

W.L. Kurtz

Review of American Heavy
Minerals Property
Lost Basin District
Mohave County, Arizona

Attached is Mr. Corn's report on the known drilling at the Apache Oro property of American Heavy Minerals in the Lost Basin District, Mohave County, Arizona. Further details on the drilling and assay results are in the Tucson files where they were reviewed by Corn.

Corn's recommendation of surface sampling along the contact with the fanglomerate as this zone is the nearest to the projection of the eroded detachment fault. This sampling was accomplished (Report of April 19, 1991) when 44 sample sites with multiple samples taken of various geologic -mineralogic phases were collected and analyzed.

A part of Corn's April summary said "... property has little exploration potential for concealed, near-surface bulk-tonnage gold mineralization...."

The map of sample sites and assay results was submitted to the owner of the property on August 20, 1991, as stated in his submittal of all the previous data on the property (Tucson files).

Again, an exploration bet is eastward under gravel and fanglomerate cover. A few holes have been drilled through the gravels with no gold values reported. Thus, blind drilling of HEM generated targets is the only known exploration method for gravel covered areas at this time.

JDS:mek
Att.


James D. Sell

RUSSELL M. CORN

Registered Geologist

8425 DESERT STEPPES DR.

TUCSON, ARIZONA 85710

PHONE 602 - 298-1770

James D. Sell

Manager, Southwestern Exploration

ASARCO, Inc.

P.O. Box 5747

Tucson, AZ 85703

March 24, 1991

Re: Review of American Heavy Minerals Property
Lost Basin District
Mohave County, AZ

The American Heavy Minerals (Apache Oro) Lost Basin property consists of 176 lode claims and 92 placer claims on the east side of the Lost Basin Range. The claims cover sheared and altered Precambrian metamorphic rocks along the projected northern extension of the Lost Basin Detachment Fault, adjacent placer gold deposits, and a number of narrow, gold-bearing quartz veins. Known vein deposits and the limited placer potential of the property are not of economic interest, but there is a possibility of concealed mineralization along the projected trend of the detachment fault.

The placer gold potential of the property has been investigated by several companies including Western Nuclear, AMAX and Billiton Minerals. Their results indicate that appreciable placer values are confined to thin Quaternary alluvial channels and that the underlying Late Tertiary fanglomerate contains little recoverable gold. The fanglomerate is unsorted, bouldery, and reflects an environment unfavorable for placer gold concentration. The known alluvial placers probably represent a residual concentration from the fanglomerate and reworking of gold originally concentrated on the older erosion surface beneath the fanglomerate. Numerous shallow holes were drilled by Apache Oro in the early 1970's, Resources International Partners (RIP) in the late 1970's and early 1980's, and Billiton Minerals in 1989 in exploration of both the placer and lode potential of the property. Most of the earlier Apache Oro and RIP drill data is not believed reliable because of poor sampling procedures and questionable assays. American Heavy Minerals belief that the fanglomerate contains appreciable gold is based on these early high assays, anecdotal evidence, and erroneous USGS reports.


Billiton Minerals 1989 drilling program was directed primarily toward the placer potential of the property. They drilled approximately 40 shallow holes (including duplicates) in the Late Tertiary fanglomerate and 5 shallow holes in exposed Precambrian rocks. Recoverable placer gold values were determined by gravity processing and amalgamation of the drill cuttings. Recoverable gold values were extremely poor in their earlier drill holes but increased by a factor of 10 or more after a change in processing methods late in the program. However, even with better recovery, the recoverable gold content of the fanglomerate was in the general range of .002 to .005 oz Au/yd. Unfortunately there was no data that reliably indicated the total amount of contained gold or the percentage recoveries during the later processing. Billiton's drill holes in exposed metamorphic rocks did not encounter any gold mineralization of interest. (Figure 1).

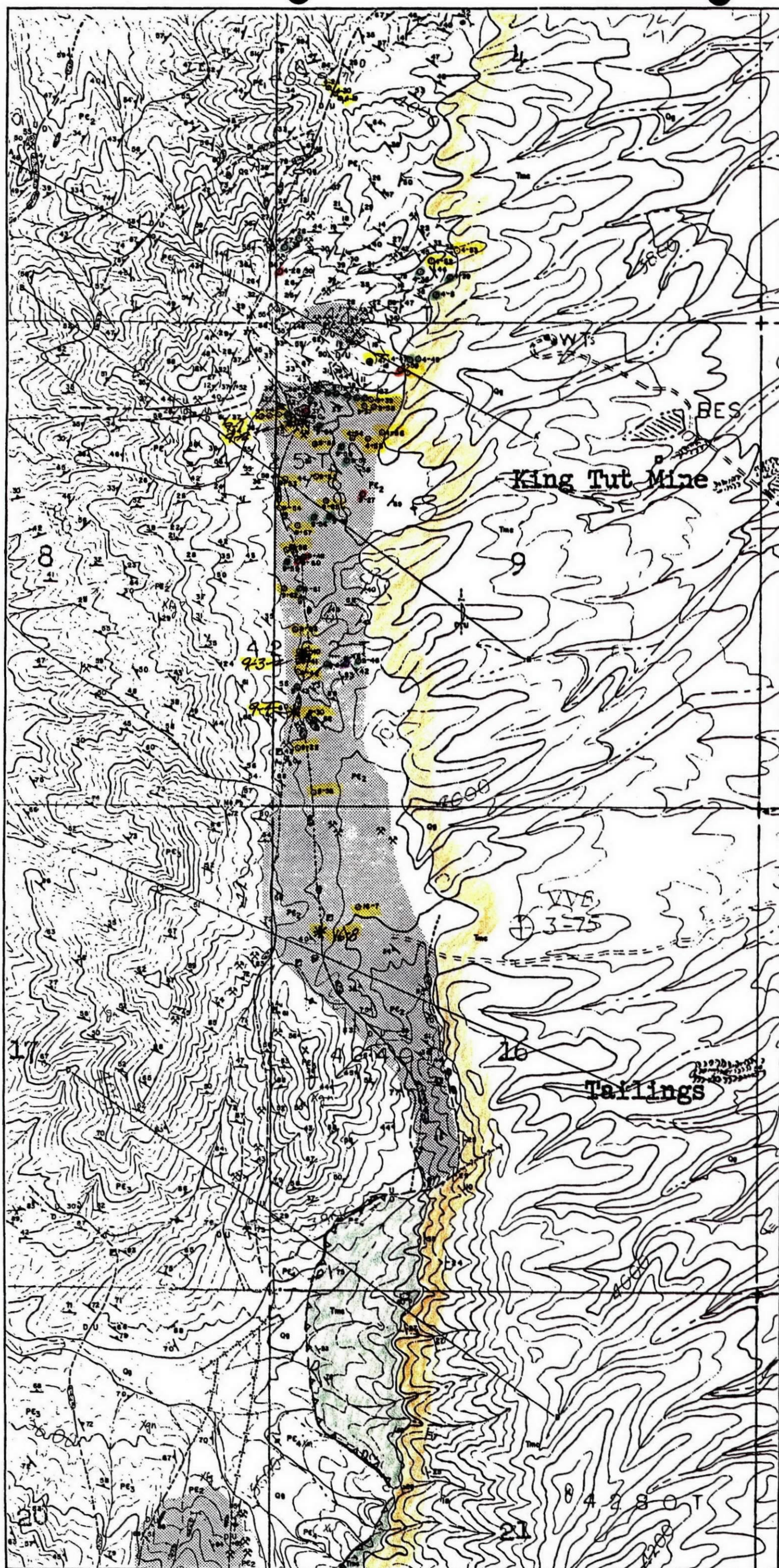
Resources International Partners drilled approximately 50 shallow holes in altered and sheared metamorphic rocks along the northern projection of the Lost Basin Detachment Fault. The reported results show an average of .01 to .02 oz Au/T for many of the drill holes but assays are believed questionable. The location of the RIP drill holes, those with higher reported values, the five holes drilled by Billiton Minerals and the contact of the metamorphic rocks and overlying Late Tertiary fanglomerate are shown on the attached map. A zone several thousand feet wide along the fanglomerate contact and the projected trend of the eroded detachment fault has not been tested by previous drilling and could have potential for concealed bulk-tonnage gold mineralization.

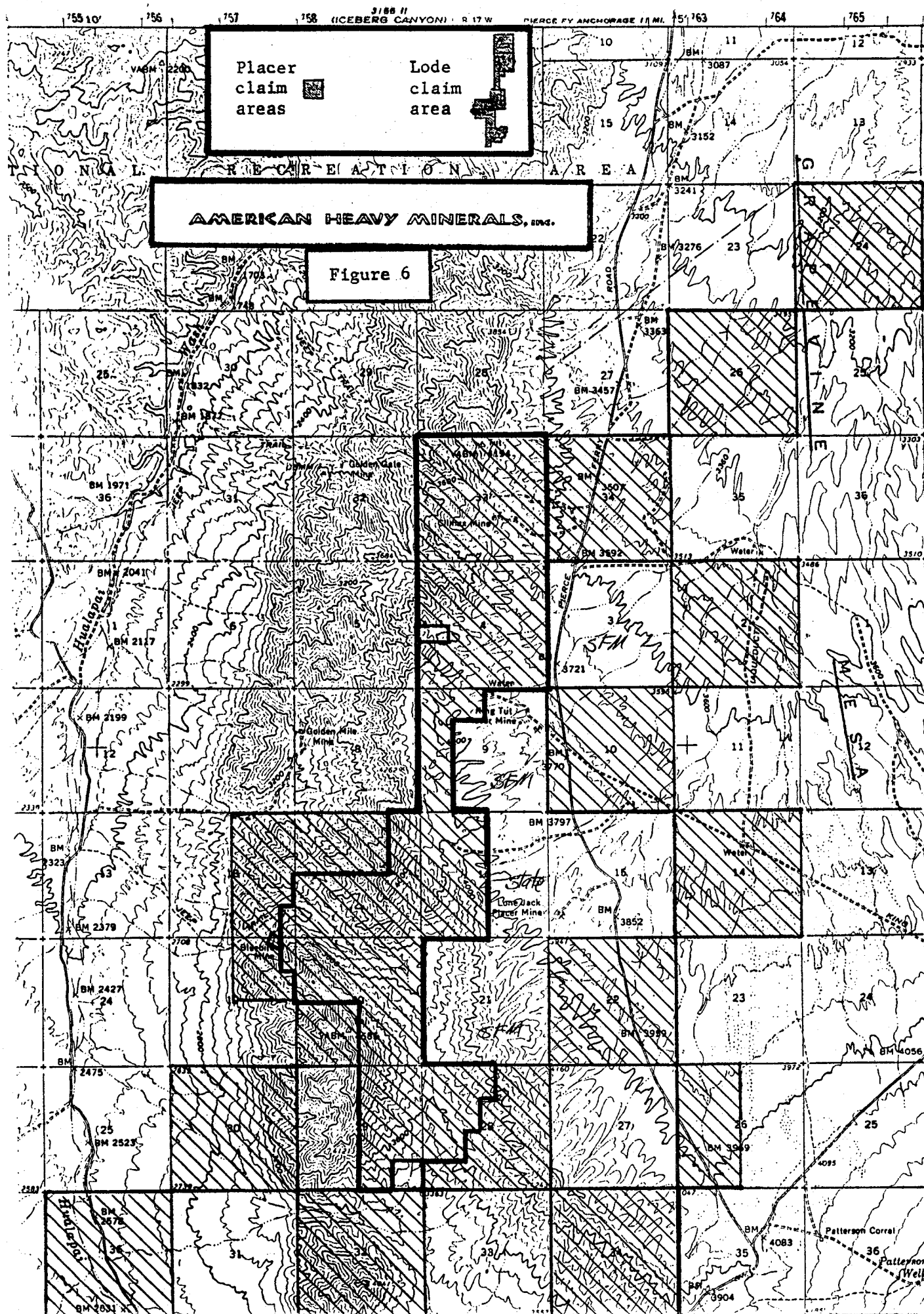
The sheared and altered metamorphic rocks are believed to reflect the former position of the eroded detachment fault zone. Similar zones of more intense shearing or the detachment fault zone preserved beneath the fan conglomerate could provide a favorable host environment for bulk-tonnage gold mineralization. Surface sampling is planned as the easiest way to determine if there is potential for this type of concealed mineralization.

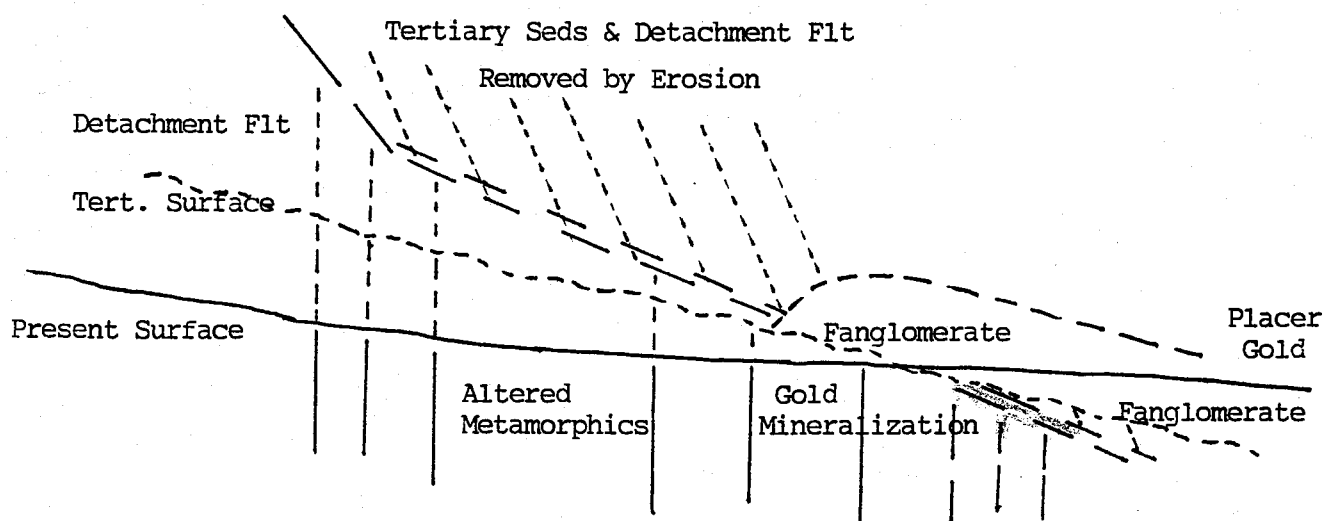
Respectfully submitted,


Russell M. Corn

- Tmc - Fanglomerate
- Tms - Sed. Rock
-  Detachment Fault
- Drill Holes
- * Billiton Mins.
- o RIP
- Average Assay
Entire Drill Hole
- 02 Au/T
- Drill hole below cut-off
- .01-.02
- .02-.03
- +.03







GENERALIZED E - W SECTION
 ILLUSTRATING GEOLOGIC RELATIONSHIPS
 LOST BASIN, MOHAVE COUNTY, ARIZONA

Tmc - Fanglomerate
Tms - Sed. Rock

△ Detachment
D Fault

Drill Holes

* Billiton Mins.

○ RIP

Average Assay
Entire Drill Hole

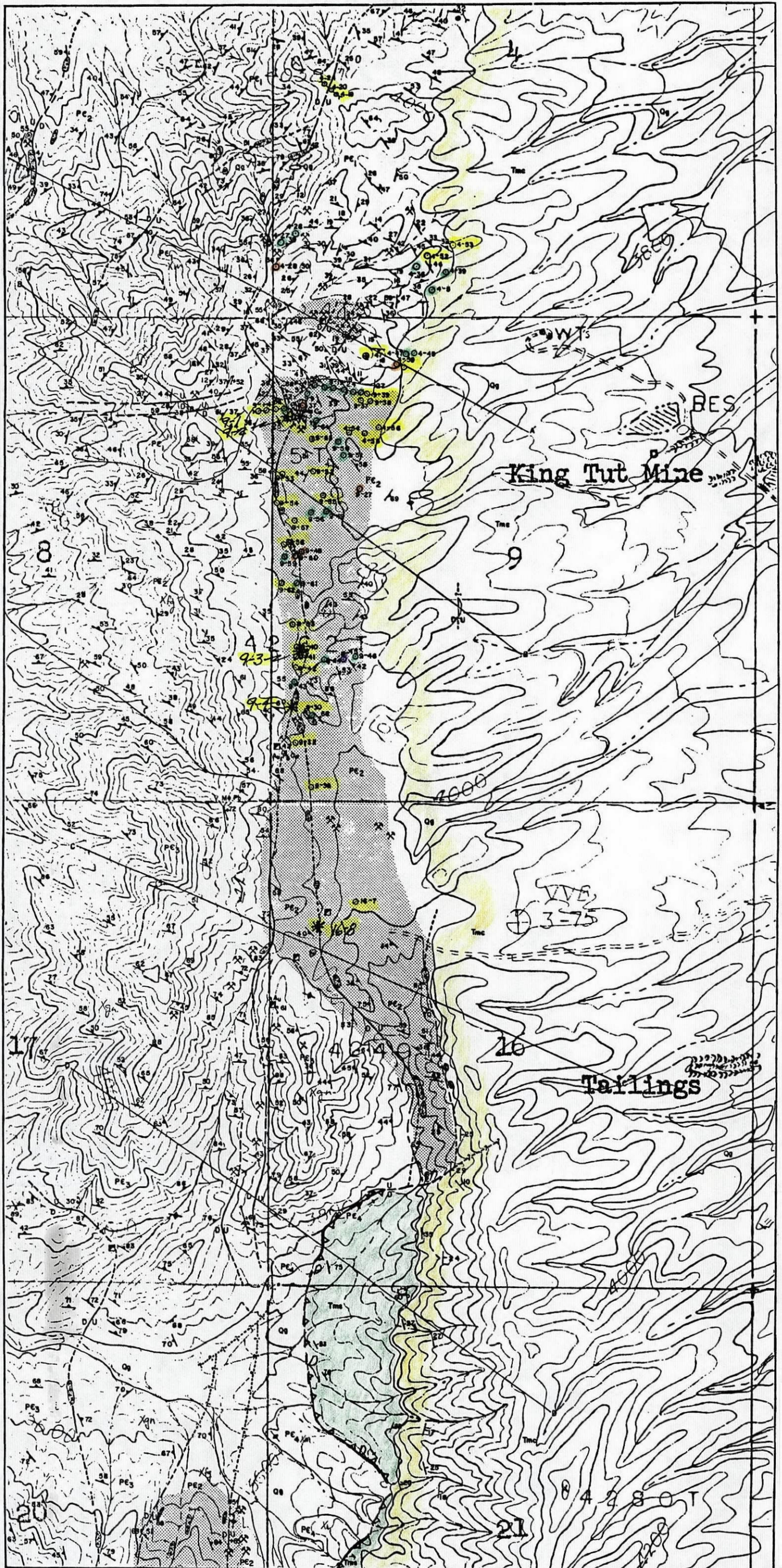
02 Au/T

drill hole below cut-off

● .01-.02

● .02-.03

● +.03



August 29, 1991

W.L. Kurtz

R.M. Corn's Report
Geology and Exploration Potential
Gold Basin-Lost Basin Districts
Mohave County, Arizona

Attached is Mr. Corn's final report summarizing his field work and compilation made in the subject districts. Mr. Corn had previously submitted detailed reports on aspects of the districts and compiled the geology on $7\frac{1}{2}'$ quadrangles, all of which are on file in Tucson.

The Gold Basin-Lost Basin districts were selected for study because of known widespread gold prospects, some of which were known to be related to the "detachment fault" style of mineralization, and therefore, the districts might host a large, bulk mineable gold deposit.

Mr. Corn points out that, within the detachment fault, mineralization can occur up ... "to several hundred feet wide and thick ... over a distance of several thousand feet" (page 9). To date, however, the thickness has been only fifty to one hundred feet thick (Table 1) in the known drilled deposits, and with the grade range of 0.03 to 0.04 opt gold, the known gold mineralization is not sufficient to support a substantial mining operation.

Mr. Corn recommends additional exploration around the Owens Mine. Asarco has subsequently obtained HEM data in the area and outlined target areas, but the land position is Santa Fe Minerals and Arizona State lease.

Corn also believes exploration potential exists in the Senator Mine area, the Cyclopic-Red Cloud-Fry area, and the Butcher Camp area. Additional data is being compiled, but to date the recent drilling reports mixed values and scattered mineralization. This information has not enhanced the concept of wide, thick, and long mineralized zones with appreciable gold grades which are the type SWED is exploring to find.

As stated above, the HEM interpretation suggested target zones under cover in the Owens Mine area, but the land situation is sticky. HEM may provide justifiable targets in other covered areas, such as in the Senator, Cyclopic, Red Cloud, Fry, and Toltec No. 2 zone, which were recently drilled with non-encouraging results, i.e., too low grade or too thin for size, and the properties were returned to the original owners. The present knowledge indicating wide zones of low values (± 0.03 opt gold) or narrow zones of better values (± 0.10 opt gold), and the apparent discontinuous nature of the mineral lenses, indicates unacceptable targets.

*you keep saying this but I've never
seen it - 50-100' thick at 03-05 is
of interest but does it really exist?*

*yes, see my note of 9/9/91
report in press.*

HEM generated blind targets of sufficient size in covered areas in favorable land positions is a viable exploration tool.

sure, sure, sure BUT
are you or are you not

JDS:mek
Att.

James D. Sell
James D. Sell
recommending Asarco do it

As you are aware, I need to get all the data together & on a map / maps so all can see & believe in.

Then the report on all the holes, am trying to get the plots of all the holes on topographic maps. Resources (Loughhead will be back on 9/16/91, etc etc.

Of course Com. Ashen, looking forward to plan of ASARCO would take up their land position but is ASARCO willing to do so for 3-6 months while drilling targets and defining? At this time I can't guarantee that the target will be an A+ ground.

ASARCO

Southwestern Exploration Division

August 29, 1991

W.L. Kurtz

R.M. Corn's Report
Geology and Exploration Potential
Gold Basin-Lost Basin Districts
Mohave County, Arizona

Attached is Mr. Corn's final report summarizing his field work and compilation made in the subject districts. Mr. Corn had previously submitted detailed reports on aspects of the districts and compiled the geology on 7½' quadrangles, all of which are on file in Tucson.

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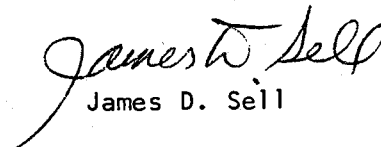
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W.L. Kurtz

August 29, 1991
Page 2

HEM generated blind targets of sufficient size in covered areas in favorable land positions is a viable exploration tool.

JDS:mek
Att.


James D. Sell

**GEOLOGY AND EXPLORATION POTENTIAL
OF THE GOLD BASIN AND LOST BASIN MINING DISTRICTS
MOHAVE COUNTY, ARIZONA**

Russell M. Corn

May, 1991

GEOLOGY AND EXPLORATION POTENTIAL
OF THE GOLD BASIN AND LOST BASIN MINING DISTRICTS
MOHAVE COUNTY, ARIZONA

Summary

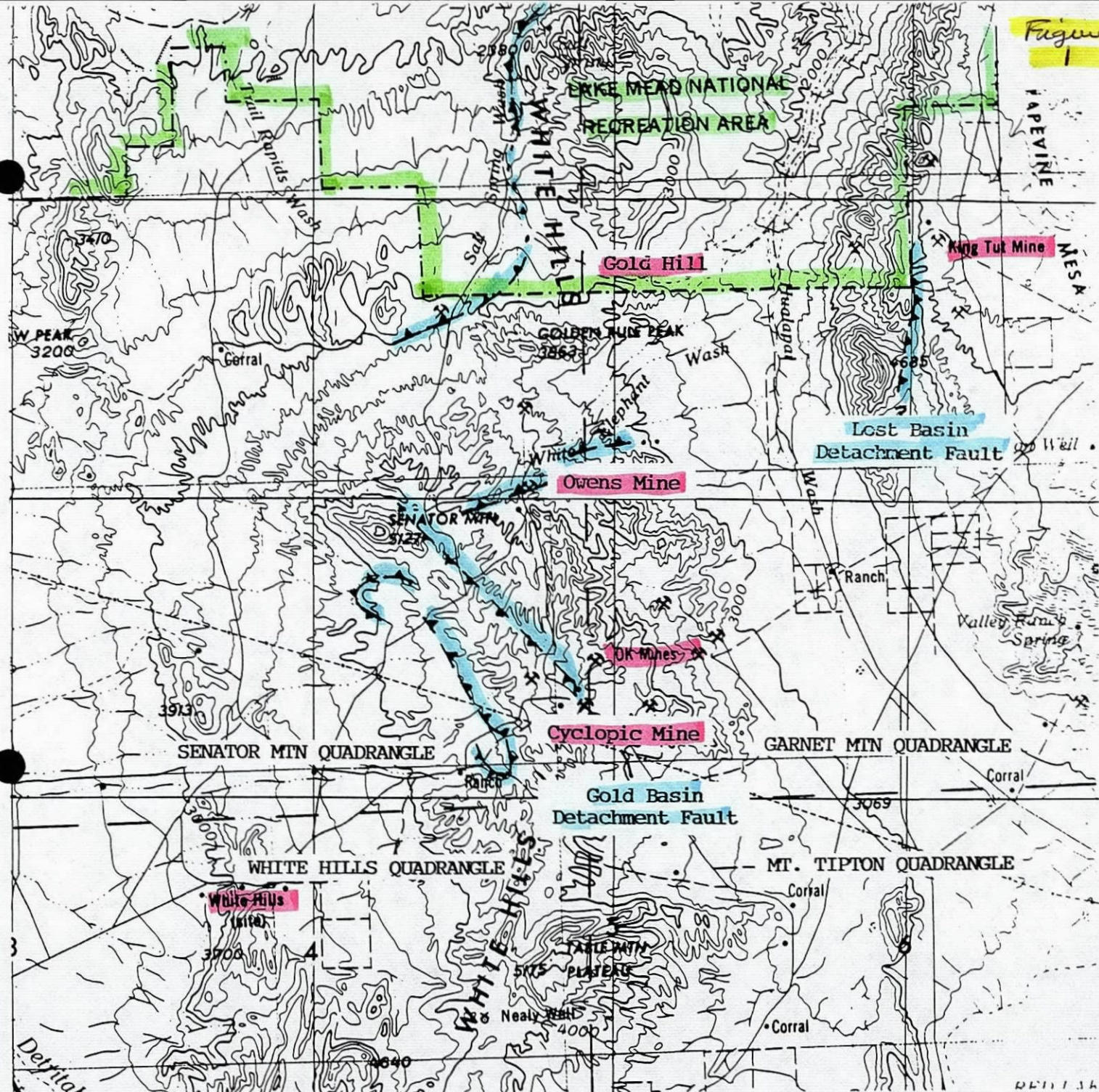
The geology of the Gold Basin and Lost Basin Mining Districts, northern Mohave County, Arizona is dominated by regionally extensive, sub-horizontal detachment fault zones that consist of a 200 to 400 foot thick zone of coalesced listric faults and thoroughly sheared and brecciated rocks. Geologic investigations indicate that the Gold Basin Detachment Fault Zone is a favorable host for superimposed epithermal gold mineralization and that the Gold Basin District has a favorable exploration potential for concealed, detachment-hosted, bulk-tonnage gold mineralization. The epithermal detachment-hosted mineralization occurs as linear, tabular lenses of diffuse, non-vein mineralization with little associated silica or sulfides. Mineralized lenses are up to several hundred feet or more wide and several thousand feet in length. Past exploration in the district has been concentrated in the immediate vicinity of exposed mineralization and has resulted in an indicated possible gold resource of approximately 100,000 ounces. Any substantial mining operation in the district will require the discovery of larger-scale mineralization concealed beneath post-ore and structural cover and exploration should be directed toward this objective. Half of the land in the district is owned by Santa Fe, and exploration tools and methods that could be used to detect concealed mineralization have not been defined. A thorough appraisal of the land and other exploration problems and a study of exploration tools and methods that can be used to indicate the presence of concealed mineralization are recommended before any substantial exploration effort is undertaken. (Figure 1)

General

This report is intended as a final report summarizing the results of geologic investigations carried out during the period January through April, 1991 in the Gold Basin - Lost Basin Mining Districts of northern Mohave County, Arizona. Separate reports were submitted earlier on specific areas investigated in detail and should be referred to for more detailed descriptions of the geology and mineralization in these areas. An earlier report, Geology and Gold Mineralization, Gold Basin - Lost Basin Mining Districts, dated February, 1991, described the results of geologic map compilation and literature research in the Gold Basin - Lost Basin Mining Districts. Brief descriptions of individual mines, past production, and the width and grade of the various veins in the Gold Basin and Lost Basin Districts are included in an appendix to the February report. Separate reports describing specific investigations in the Lost Basin and Gold Basin Districts include:

1. Review of American Heavy Minerals Lost Basin Property. (3-24-91)
2. Geologic Investigations and Sampling, American Heavy Minerals Lost Basin Property. (4-19-91)
3. ACNC Drill Results, Owens Mine Area. (3-21-91)
4. Geology and Exploration Potential of the Owens Mine Area. (5-91)

Private reports and data from other companies that were copied and incorporated

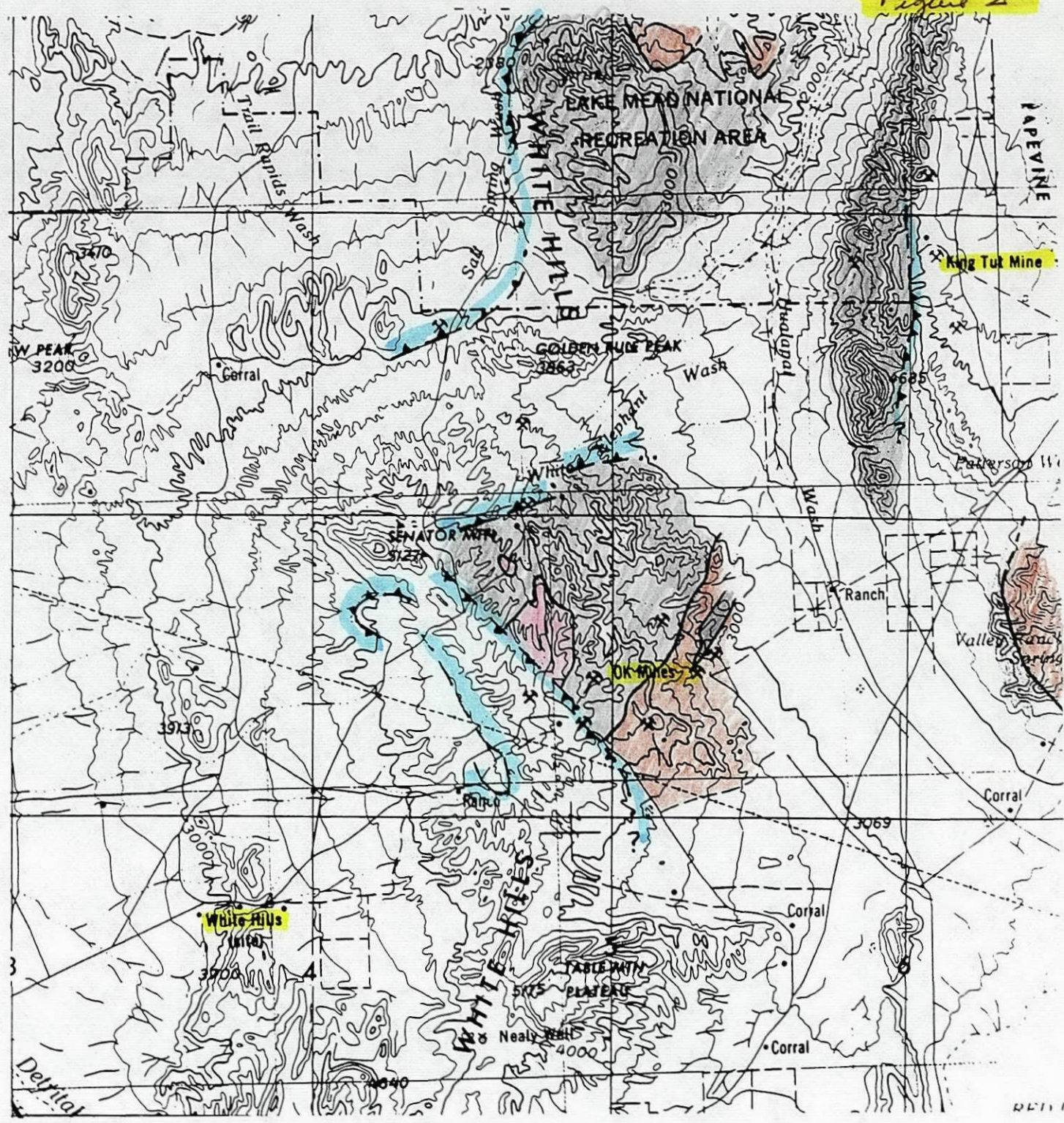


INDEX MAP OF THE GOLD BASIN - LOST BASIN
MINING DISTRICTS, MOHAVE COUNTY, ARIZONA

Detachment Fault Zone

Scale 1" = 3 miles

Figure 2



GENERALIZED GEOLOGY OF THE PRECAMBRIAN BASEMENT
GOLD BASIN - LOST BASIN DISTRICTS

- Cretaceous Granite
 - Precambrian Granite
 - Precambrian Gneiss
- Scale 1" = 3 miles

in the files are listed in an appendix to this report.

The area included in the geologic study of the Gold Basin - Lost Basin Mining Districts is located in northern Mohave County, Arizona and encompasses the Garnet Mountain and Senator Mountain 15' quadrangles and the adjacent northern half of the White Hills 15' quadrangle and the MT Tipton NW 7½' quadrangle. The geologic investigations were predominantly a review and compilation of published geologic literature, previous geologic studies and results of exploration by other companies. Field work was very limited except in areas of specific investigations. The available geologic maps and data on geology and mineralization were integrated and are presented on a uniform 1:24,000 scale topographic base. Sections that illustrate the "thin-skinned" deformation and the complex detachment faulting in the area accompany this report. Also accompanying this report are sketch maps showing the distribution of trenches, drill holes, and indicated mineralization at the Cyclopic and Red Cloud properties in the Gold Basin District.

Figure 1

Figure 2

The Gold Basin - Lost Basin districts are part of the Santa Fe Railroad land grant checkerboard of northern Mohave County with alternate sections throughout the area owned by the Santa Fe Railroad. Exploration access to the northern part of the area is limited by the Lake Mead National Recreation Area.

Precious metal mineralization is the only indicated mineralization of interest, and exploration activity since 1980 has been concentrated on the placer gold deposits at Lost Basin and on the detachment-hosted epithermal gold mineralization at Gold Basin. Current exploration activity includes Kennecott's geologic studies, their 1990 drilling of two small prospects in the vicinity of Senator Mountain, and the detailed sampling and drilling program carried out by the Toltec - Consolidated Rhodes venture at the Cyclopic - Red Cloud - Fry mines at Gold Basin. The venture recently terminated their option agreement on the Cyclopic property and may also terminate their exploration program on adjacent prospects. A tabulation of indicated and potential detachment fault-hosted gold mineralization in the district is included in this report, together with sketch maps illustrating the distribution of drilling at the Cyclopic and Red Cloud properties. The ACNC and Mapco drill hole data on the Owens Mine area has been presented in separate reports.

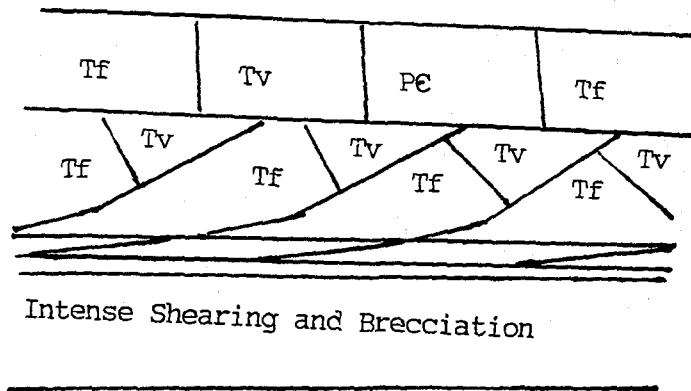
Table 1

Geology

The geology of the Gold Basin - Lost Basin area is dominated by regionally extensive, Mid-Tertiary, low-angle, detachment-type faults. The detachment fault zones, as shown on the geologic maps and accompanying sections, comprise a 200 to 400 foot thick zone of coalesced listric faults and thoroughly sheared and brecciated rocks. The fault zones can be visualized as a sub-horizontal, stratiform interval of intense shearing that is a favorable host for later mineralization, sandwiched between overlying structurally-rotated listric fault slices of upper-plate rock units and underlying competent, lower-plate basement rocks. The detachment fault zones are illustrated on the 1:24,000 scale maps by (1), the indicated low-angle fault above competent basement rocks and (2), the low-angle fault at the base of overlying structurally-rotated upper-plate rocks. The upper and middle plates of the fault zone are not easily distinguished where intermediate fault-bounded slices of competent Precambrian rocks occur in the upper part of the detachment fault zone as in the area southwest of the Cyclopic Mine.

Figure 3

SCHEMATIC SECTION THROUGH GOLD BASIN DETACHMENT FAULT



UPPER PLATE
Structurally rotated &
displaced rock units

MIDDLE PLATE
Thin sheets of
displaced rocks &
coalesced listric faults

LOWER PLATE
Competent Basement

The detachment faults mantle uplifted areas of competent basement rocks comprised of Proterozoic, amphibolite-grade gneissic metamorphic rocks that were intruded extensively by post-metamorphic Precambrian granites, and northwest of the Cyclopic Mine, by a Cretaceous monzogranite stock. Geologic relationships indicate that the uplifted basement was denuded by the detachment faulting with slices of characteristic basement rock types mixed with rotated Tertiary fanglomerate and volcanic rocks in the upper plate units.

Pre-detachment Tertiary rocks include a thick sequence of structurally-rotated volcanic and volcanoclastic rocks and fanglomerate. Lamprophyre dikes and sills are the latest pre-mineral Tertiary rocks. They are associated with the White Hills veins and are common along the detachment fault. In the detachment fault zone, they are sheared, predate at least some of the fault movement and are altered and mineralized. Post-detachment rocks include the Late Tertiary "Muddy Creek" sequence of gently-dipping fanglomerate, basalt, limestone, mudstone and evaporites which were unconformably deposited on a post-mineral erosion surface. One of the major problems with earlier mapping in the area was that the pre-detachment and post-detachment fanglomerates were not differentiated. Although lithologically similar, the older fanglomerate is structurally rotated, associated with volcanic rocks and contains steeply-dipping rhyolitic tuffs, while the later fanglomerate is gently-dipping, post-mineral, and was draped onto the Tertiary erosion surface.

The detachment faulting is regional in extent and dips gently to the south and west with the fault-bounded slices of upper plate rocks increasing down-dip both in number and thickness. As shown on the geologic maps and the accompanying sections, the fault-bounded, upper-plate slices include Precambrian granite and gneiss as well as the Tertiary rocks, and Precambrian rocks probably make up the majority of the upper plate sequence. Wilkins, AGS 1984 Field Trip Guidebook, Kingman Area, reported that the Gulf drill hole, GDV-3, on the west side of Detrital Valley, penetrated Late Tertiary sediments and encountered 773 feet of gneiss that was cut by repeated low-angle listric faults with a characteristic periodicity of one major fault in each one hundred foot interval.

The accompanying sections are an attempt to illustrate the complex nature of the imbricate faulting, the sub-horizontal nature of the detachment fault zone and the regional sub-surface extent of the fault zone and overlying fault-bounded slices of upper plate rocks. The sections are simplified since there is very little sub-surface data available in most of the area. The east-west section extending from the Cyclopic Mine west across Detrital Valley into the Black Mountains is based on geologic observations in the Gold Basin area supplemented by Gulf drill hole and map data in the Detrital Valley that was obtained from Joe Wilkins, and by R.E. Anderson's mapping in the Black Mountains (USGS GQ 1394). As illustrated on the east-west section, the sub-horizontal detachment fault zone dips gently to the south and west accompanied by an increasing thickness of overlying fault-bounded slices of upper-plate rocks. The fault zone and overlying upper-plate extend for perhaps one mile under shallow pediment gravels west of Bug Hill and is then down-dropped more than 2400 feet into Detrital Valley and overlain by a thick playa lake evaporite sequence. As indicated by the Gulf drill hole data, the Precambrian metamorphic rocks in the Black Mountains are not the competent basement but instead are within the upper plate which consists of imbricate fault slices of Precambrian rocks as well as Tertiary volcanics and a complexly dissected porphyry copper alteration system.

Figures
5, 6, 7
(pocket)

In essence the detachment terrane can be considered as a layered sequence of fault-bounded lithotectonic units separated from underlying competent basement rocks by the detachment fault zone of imbricate faulting and intense shearing. The detach-

ment fault zone at the base of the sequence is the zone of most intense deformation and permeability, and presents a favorable host environment for later superimposed mineralization, particularly where rocks involved are brittle or chemically reactive. As shown on the sections, the gently-dipping detachment fault zone should be present within reasonable drilling depths for a distance of several miles from its outcrop.

Figure
4

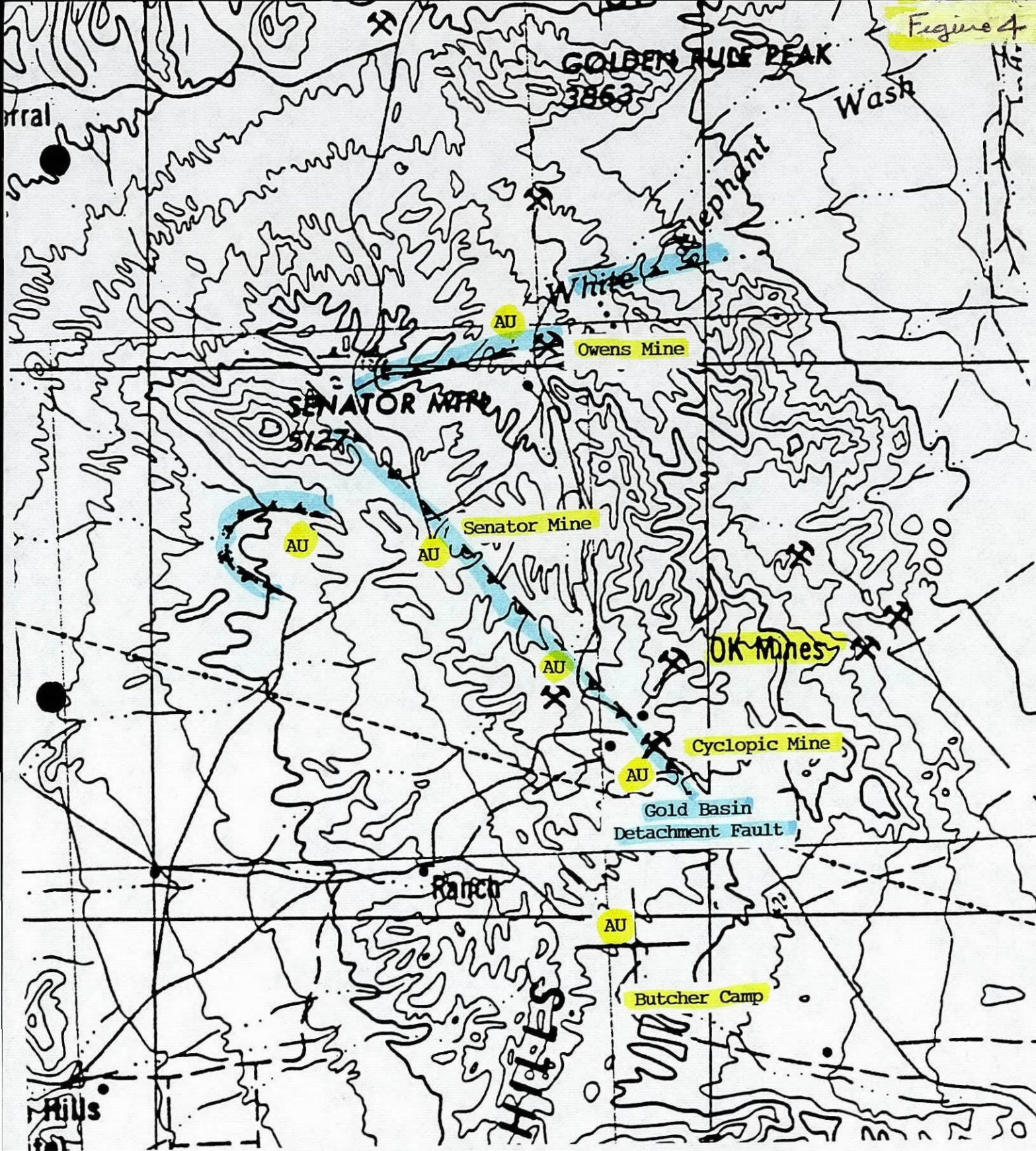
In the Cyclopic-Senator Mountain area, the Gold Basin Detachment Fault, upper-plate rock units, and gold mineralization all exhibit a northwest strike direction in contrast to the general north-south strike direction of upper-plate rocks to the south and west. Field relationships indicate that along the northwest-trending zone there is a warp in the base of the detachment fault and the zone of intense shearing thins or pinches out against the competent basement. The relationships suggest the presence of concealed sub-surface tear faults that influenced both detachment faulting and subsequent gold mineralization.

Mineralization

Precious metal mineralization is the only type of mineralization that has ever been of interest in the Gold Basin - Lost Basin Mining Districts. Epithermal silver veins characterize the White Hills district while gold is the dominant metal of interest elsewhere in the area. Metallogenic relationships and the distribution and characteristics of the various types of mineralization were summarized in the February 1991 report and have been described in detail in USGS Professional Paper 1361. Several separate ages of gold mineralization, Precambrian, Cretaceous and (post-detachment) Mid-Tertiary are reported and the various types and ages of mineralization are shown on the compiled geologic maps of the area. Gold occurs as placer deposits, in narrow, well-defined veins, in small episyenite pipes and dikes, and in diffuse, non-vein, epithermal mineralization hosted by the low-angle, intensely sheared, detachment fault zones and overlying high-angle breccias.

The larger placer gold deposits are located downslope from eroded detachment faults where recent erosion has removed the Late Tertiary conglomerate and exhumed the older Tertiary erosion surface. Spatial relationships suggest that in many instances the original source of placer gold was lode gold mineralization in the eroded detachment fault zone. Placer deposits at Lost Basin were recently explored by Billiton Minerals with negative results and available data indicates that none of the gold placers in the area are of potential interest. The gold-bearing episyenite dikes and pipes (desilicated metasomatic rocks with disseminated pyrite) commonly contain values of .10 oz Au/T. However, all the episyenites known are relatively small and not of economic significance.

The gold-bearing quartz-siderite veins, dated as Cretaceous by the USGS, are relatively narrow and gold values of interest are concentrated in limited zones of later shearing and brecciation. Available data indicates that known veins contain limited tonnages averaging .20 to .30 oz Au/T over widths of three to five feet. The veins exhibit associated chlorite-siderite alteration and consist of white quartz, coarse-grained carbonate, (ankerite-siderite) and variable, but generally minor amounts of coarse-grained sulfides, pyrite, galena and chalcopyrite. Higher-grade values are in limited shoots and are closely related to superimposed brecciation, fine-grained hematitic limonite, and clear druzy quartz. The higher-grade brecciated quartz vein material is often similar in appearance to the quartz breccias in the detachment fault zone at the Cyclopic Mine. A recent discovery at Lost Basin of gold filling fractures in sideritized rock and not directly associated with white quartz vein material, suggests that the higher-grade values in the veins are superimposed on



SKETCH MAP ILLUSTRATING THE ASSOCIATION OF GOLD MINERALIZATION
WITH THE GOLD BASIN DETACHMENT FAULT

Gold Basin District, Mohave County, Arizona

Scale 1" = 1.5 miles

earlier mineralization and may be related to the period of Mid-Tertiary, epithermal mineralization.

The detachment-hosted epithermal gold mineralization in the Gold Basin District consists of diffuse, non-vein mineralization localized in sheared and brecciated zones within the detachment fault zone and in high-angle fault breccias in overlying upper-plate rocks. Values are dominantly gold and the mineralized zones exhibit associated siderite-chlorite-hematite alteration, fine-grained hematitic limonite, anomalous As, Hg, W and Pb and little evidence of associated sulfides or silica. Known mineralization is completely oxidized and the mineralized zones are non resistant and commonly concealed by alluvium or surface debris. The epithermal mineralization is superimposed on the detachment fault zone and overlying upper-plate units and is probably localized by sub-surface tear faults and renewed post-detachment fracturing and shearing of overlying rocks.

As exemplified by the Cyclopic and Red Cloud properties and shown on the accompanying sketches, larger-scale mineralization occurs as parallel, and en echelon, elongate, tabular, rod-like lenses up to one hundred to several hundred feet wide and thick with related lenses of mineralization occurring over a distance of several thousand feet. The larger mineralized zones exhibit extensive lower grade values (.02 - .05 oz Au/T) and include limited higher-grade intervals of .10 - .50 oz Au/T. Narrow 5 to 10 foot wide zones of localized post-detachment shearing contain similar higher-grade values that are not accompanied by more extensive mineralization. *Table 1.*

Mineral Potential

Geologic investigations were carried out on several of the larger prospects in the area and separate reports have been submitted on the American Heavy Minerals property at Lost Basin and the Owens Mine Area in the Gold Basin District. The following discussion of the mineral potential in the area includes brief summaries of the results of these investigations and a tabulation of rough "order of magnitude" estimates of the extent and grade of the known detachment-hosted mineralization in the Gold Basin District. The known gold deposits in the area do not have sufficient potential to support a substantial mining operation. *Table 1.*

Lost Basin District

The results of geologic investigations, sampling and evaluation of previous drilling in the Lost Basin District indicate that the American Minerals property does not have sufficient exploration potential to be of interest. Placer Deposits with appreciable gold values are limited to thin, surficial, recent alluvial gravels and only minor amounts of gold occur in the larger volume of Late Tertiary fanglomerate. The relatively-narrow, gold-bearing, quartz-siderite veins at Lost Basin are not of economic interest and the geologic examinations and sampling carried out near the Lost Basin Detachment Fault Zone and adjacent to post-mineral cover along its northward projection, indicate that there is little likelihood of concealed, detachment-hosted or other bulk-tonnage gold mineralization on the American Heavy Minerals Lost Basin property.

Gold Basin

The Gold Basin detachment Fault Zone is an extensive, gently-dipping, favorable host for gold mineralization. Where exposed, it is marked by numerous prospects, scattered mines and widespread anomalous gold values with the large-scale pattern emphasizing the occurrence of gold mineralization at the margin of post-mineral and structural cover. Approximately 60 to 70 percent of the projected outcrop edge of the non-resistant detachment fault zone is concealed beneath post-ore conglomerate and alluvium and even in exposures, the upper part of the zone of intense shearing is almost always covered by surface debris and talus from upper-plate rock units. Previous exploration has been concentrated in the near vicinity of exposed mineralization and very little exploration has been carried out in areas where the detachment fault zone is concealed.

The accompanying tabulation of gold resources summarizes the known and indicated detachment-hosted gold mineralization in the Gold Basin district and includes notes on the possible extent of the mineralization. A rough estimate of the possible gold resource contained in exposed and known mineralization is approximately 100,000 ounces. This resource is located primarily in the Cyclopic - Red Cloud - Fry area and a substantial part of the resource has resulted from recent exploration in the poorly-exposed, upper part of the detachment fault zone. As illustrated on the sketches and the geologic maps, gold mineralization occurs as elongate, northwest-trending, tabular or rod-like lenses superimposed on and hosted by the detachment fault zone. The mineralized lenses are parallel, spaced at an indicated regular interval of 1,000 to 1,200 feet and include both narrow intervals with values up to .50 oz gold and larger 100 to 150 foot wide zones up to 150 feet thick, averaging .02 to .05 oz gold. *Table 1*

The distribution of previous drilling and extent of mineralization in the Cyclopic - Red Cloud area is illustrated on accompanying sketch maps and the potential of the Owens Mine area is described in a separate report. The distribution of values and the continuity of better-grade values within the mineralized zones is not known. Mineralization exposed in a road cut at the Red Cloud prospect (Toltec Zone No. 1) included 60 feet @ .05 oz Au/T accompanied by an adjacent 60 feet @ .01 oz Au/T. Production and reserve estimates for the Cyclopic Mine indicate that the higher-grade material mined in the early 1900's, (.20 to .35 oz Au/T), made up 5 to 10 percent of the total volume of mineralization and contained approximately 25 percent of the total gold. Data from the Owens Mine area shows a large volume of weak gold mineralization as an envelope around higher values in the detachment fault zone, while higher-grade values at depth occur in isolated veins. The outcrop pattern of mineralization at the Red Cloud prospect and data from the Owens Mine Area suggests that the mineralized zones are offset along late northeast-trending faults, further complicating the continuity of better-grade values. *Figure 9*

The geologic features that control the epithermal mineralization have not been defined. Mineralization appears to be localized by post-detachment, steeply-dipping faults and shear zones and it is probable that the known mineralized zones will continue beneath cover and that similar mineralization, perhaps at the same regular spacing noted above will occur completely concealed by upper-plate rocks or post-ore cover south and west of the Cyclopic - Red Cloud - Fry area, and elsewhere in the district. Although the drill indicated mineralization at the Owens Mine is limited, the extensive area of anomalous gold values and weak gold mineralization along the detachment fault zone suggests that this area has potential for larger-scale, bulk-tonnage mineralization where the fault zone is concealed beneath post-*Figure 10, 11*

Mineral Potential
Detachment-Hosted Gold Mineralization
Gold Basin District, Mohave County, Arizona

Prospect/Property	Indicated Extent of Mineralization	Indicated/Inferred Tons	Au oz/T	Gold Resource	Possible Extent	Possible Tons	Grade oz Au/T	Possible Gold Resource - oz	Comments
Cyclopic Arden Larson	400' X 2,200' area of intense drilling & trench- ing. Mineralized wedge is 0-50' thick. Est. 50% of area drilled @ + .01 oz Au/T. Millar - drill indicated estimate Jenkins-Gold River Mtn States - Drill Proven	800,000 T 150,000 T	.04 .07	32,000		1,000,000 T	.03	30,000	Past Production - 30-50,000 T @ .20- .35 oz Au/T 30-50,000 T of Tailings @ .06 oz Au/T. Drilling along zone to NW is all in lower plate. Covered area to S has not been drilled.
Red Cloud (Toltec- Consol. Rhodes)	Zone No. 1 100 - 150' wide 1200' long 100' deep exposed & drilled Zone No. 2 20' wide at Higrade DH T-11 (55' @ .48 oz Au/T)	1,000,000 T	.03	30,000	Should continue to W beneath cover. Prospects indicate additional 1,000' length to E. 20-50' width	2,000,000 T 200,000 T	.03 .05-.10	60,000 15,000	Mineralized zone is pro- bably offset on N-S faults. All drilling is within 50-100' of exposed mineralization. Very little data. Zone includes DH T-11, 55' @ .477 oz Au/T & Fluorite Pit at approx. .10 oz Au/T. Extent of Foxhole min- eralization is not known.
Fry Arden Larson	5' wide 100' deep 800' long 1930 Rept - E.H. Crabtree Projection from UG workings	94,000T	.60 - 1.0	(?)	Mineralization Projects under cover Length - 1,000' +	50,000 T	.30 (?)	15,000	Toltec trench results 5' @ .97 oz Au/T 10' @ .67 oz Au/T 10' @ .15 oz Au/T
Owens	Trenched & drilled area 200' X 1,000' Est - 100' deep Wedge shaped zone. Higher-grade values are beneath low-angle, post-mineral fault.	385,000 T	.026	10,000				10,000	Drilling was inhibited by cover & land situ- ation. Mineralization & anom. Au continues for 5,000' to W & is known beneath cover for 1000- 1500 ft. to No. Drilling is primarily in lower part of detachment zone adjacent to exposed mineralization.

Prospect/Property	Possible Extent	Possible Tons	Grade oz Au/T	Comments
Sec 24 - N & E of Fry (Toltec-Consol. Rhodes)				Poorly exposed mineralized zones NE of & N of Fry have not been tested by drilling.
Senator				Surface Au anomalies on on narrow shear zones near Senator Mine have not been drilled.
Senator (Kennecott)	5-10' wide 100' deep 1000' long		.03-.10	Prospects on narrow shear zones. One of KC wide-spac- ed drill holes reportedly encountered a substantial interval @ +.01 oz Au/T.
Bug Hills	5-10' wide 1000' long Unknown depth		.10	Mineralized, narrow high- angle fault breccias.

ore conglomeration and alluvium. Airborne geophysical surveys are planned for the Owens Mine area and results may help in determining its potential. Known gold mineralization near the Senator Mine is localized in relatively-narrow, steeply-dipping shear zones and mineralization in the Bug Hills is localized in narrow high-angle fault breccias in upper-plate rocks. Although not of economic interest, these prospects do illustrate the extensive nature of the epithermal gold mineralization and suggest that a more favorable structural host environment in these areas could also host a bulk-tonnage gold deposit.

Exploration Potential

The Gold Basin District has a favorable exploration potential for concealed, detachment-hosted, bulk-tonnage gold mineralization. The detachment fault zone is a stratiform favorable host for superimposed gold mineralization. It is analogous to the host environment provided by a reactive silty limestone or permeable dolomite in other areas and the major exploration problem consists of determining the geologic features and conditions that have localized subsequent mineralization and the location of concealed deposits. Gold is known to occur in the detachment fault zone as diffuse, non-vein mineralization, that varies from narrow, higher-grade zones to lenses more than 100 feet wide and thick. Concealed, more intense mineralization of this type could easily occur in lenses 500 feet or more wide which would be attractive exploration targets.

There are several areas along the edge of the detachment fault zone that exhibit placer prospects, gold mineralization, extensive alteration and anomalous gold values adjacent to post-ore or structural cover, features believed characteristic of areas with favorable potential for concealed mineralization. These areas include:

1. The Owens Mine Area
2. The Senator Mine - Senator Mountain Area
3. The Cyclopic - Red Cloud - Fry Area
4. The Butcher Camp Area south and southeast of the Cyclopic - Red Cloud properties

Recommendations

The exposed, known gold mineralization is not sufficient to support a substantial mining operation and exploration should be directed toward concealed, larger-scale, detachment-hosted gold deposits. Emphasis should also be given to studies determining the controls over mineralization and the application of exploration tools, geologic, geochemical and geophysical, that would help in determining the position of concealed mineralization. The results of this type of study would be applicable not only to the Gold Basin District, but throughout the detachment terrane of the southwest.

Specific suggestions for an exploration program in the Gold Basin District include:

1. A thorough appraisal of the problems and costs of leasing or joint venturing the Santa Fe land, is advised prior to any substantial exploration effort.
2. Detailed geologic mapping of the Owens Mine area and geochemical sampling around the periphery of the post-ore cover.
3. Initial reconnaissance-type drilling of the Owens Mine Area to test geophysical anomalies, determine the thickness of cover, the position of the detachment fault zone, and the presence of alteration and mineralization within it.
4. Additional, detailed geologic mapping, sampling and appraisal of the potential for larger-scale, concealed mineralization in other areas of exploration interest along the margin of the Gold Basin Detachment Fault.

Respectfully submitted,



Russell M. Corn

APPENDIX

REPORTS ON LOST BASIN AND GOLD BASIN

(in ASA Record file)

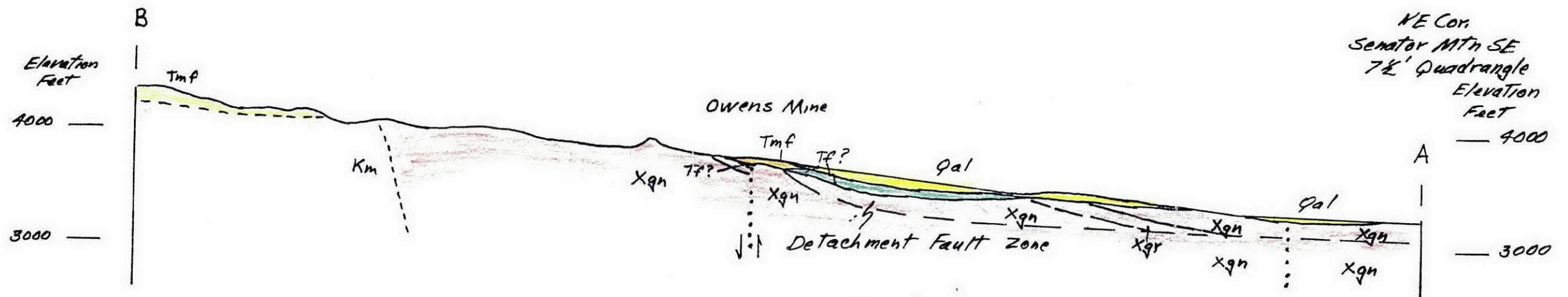
Lost Basin

- 1967-1969 Rough drill hole logs, Assays and Spectrographic analyses - Apache Oro Corp.
- 1967 Total Intensity Airborne Magnetic and Scintillation Survey, Lost Basin Mountain Range, Arizona by Heinrichs Geoexploration Co.
- 1967 Reconnaissance Geologic Investigation Lost Basin Area, Mohave Co., Ariz. by Donald Cooley - Heinrichs Geoexploration Co.
- 1968 Electrical Geophysical Survey, Lost Basin Area, Mohave Co., Ariz. Includes I.P., Resistivity and S.P. for Gunnex Ltd by Heinrichs Geoexploration Co.
- 1974 Report on the Geology and Economic Potential of the Apache Oro Property by Paul Gilmour.
- 1974 Report on the Ford Mine by A.F. Trites for Apache Oro Corp.
- 1975 Assays from CDC Associates (questionable) and sample descriptions for Apache Oro.
- 1978 Assays and drill hole locations for R.I.P. holes. Quartz Hill and Red Basin area of Lost Basin.
- 1979 Report on the Climax Mine by Resource International Partners.
- 1980 Part of a thesis by A.J. Deaderick on the Apache Oro Mining Claims. Includes drill hole locations and assays for some of the R.I.P. holes.
- 1984 Generalized report with little detailed data on Geology and Mineralization of the Lost Basin Range by L.E. Smith for Apache Oro Corp.
- 1986 Santa Fe Mining - Geochemical sample locations and assay data - no descriptions.
- 1988 (?) Promotional Brochure and Tour Guide for Lost Basin Property for American Heavy Minerals by Warren Mallory.
- 1989 Billiton Minerals - drill hole location map and assay data.
- 1991 Sequential list of claim trespass and challenges to title of Apache Oro-American Heavy Minerals unpatented claims.

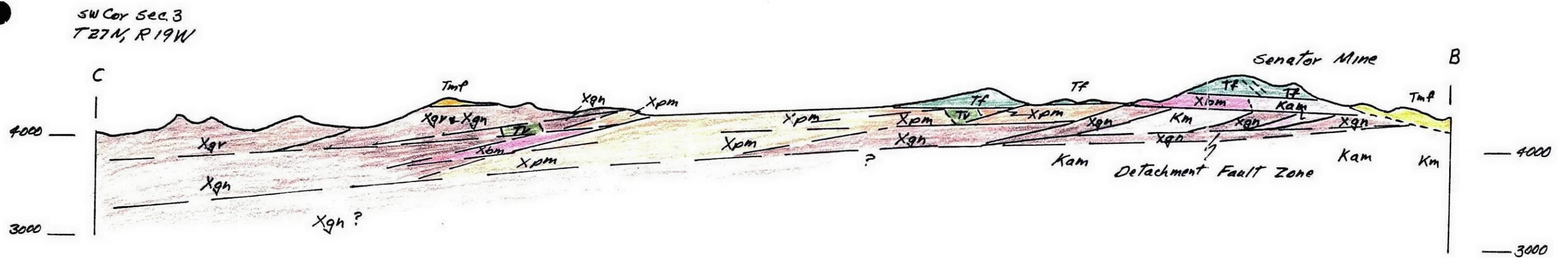
Gold Basin

- 1983 Geological and Geochemical Investigations at Gold Basin - Report by Corn and Ahern to U.S. Borax.
- 1984 Drilling Results, Gold Basin Prospect - Report by Corn and Ahern to U.S. Borax.
- 1987 Report on Owens Property, including drilling results, by Mel Lahr and Steve Mornis, American Copper and Nickel.
- 1987 Results of 1987 Drilling, Owens Project, Mohave County, Ariz. ACNC.
- 1989 Promotional report by Gordon J. Hughes for ECM, Inc. on the Roadrunner (Uno or Nineteen Forty) property.
- 1989 Promotional report by Gordon Hughes for ECM on the White Elephant Property.
- 1990 Promotional report by Gordon Hughes for ECM on the Senstor Property.
- 1984 Brief summary report by V.D. Landrum on Mapco's drilling results at the Owens Mine. Data includes geologic and drill hole location map, drill hole logs and assay results.

Northeast - Southwest Section Illustrating the Gold Basin Detachment Fault
In the Vicinity of the Owens and Senator Mines
Gold Basin Mining District, Mohave County, Arizona



Looking Northwest



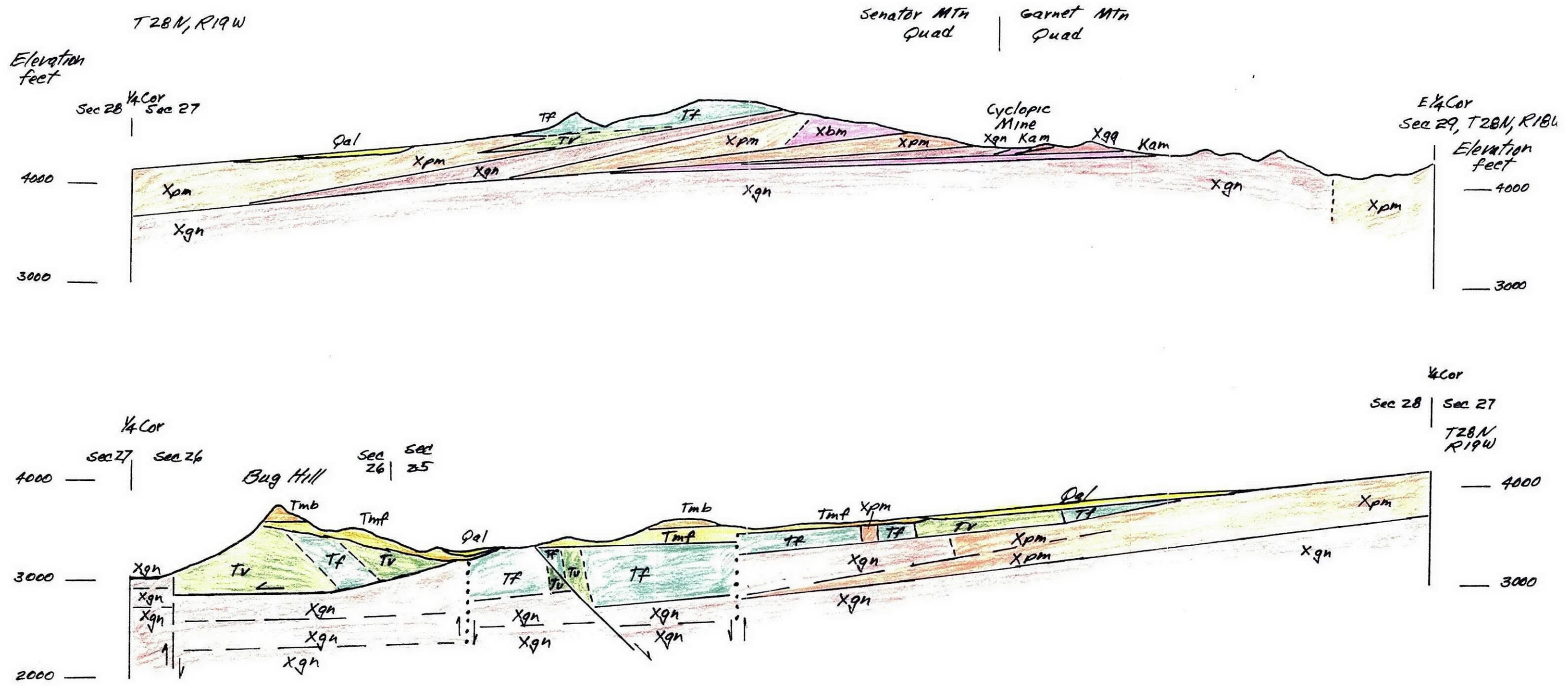
Scale 1 inch = 1000 ft - Vertical
1 inch = 2000 ft - Horizontal

NE-SW Section
Owens Mine - Senator Mine
Area.

RM Cor 4 May, 1991

W

E



East - West Section From the Cyclopic Mine To the Bug Hills
Gold Basin District, Mohave County, Arizona

E - W Section
Cyclopic Mine - Bug Hills
Area

RM Corn May 1991

Scale 1 inch = 1000 feet - Vertical
1 inch = 2000 feet - Horizontal

4 COR

sec	sec
26	25

Sec 27 | Sec 26 T2BN, R20W

R2/W | R20W

Elevation
feet

2000

1000

Elevation
feet

3000

— 2000

— 1000

Geology after Wilkins, I. Jr., 1984
AGS Kingman Field Trip
Schematic Section

~~4~~ cor
| sec 30, T28N, R21W.

2000

1000

Geology modified from RE Anderson, USGS GQ 1394
and Wilkins, V. Jr, 1984, AGS Kingman Field Trip

1/4 cor
Sec 26 | Sec 25
T28N, R21W

Detrital
Wash

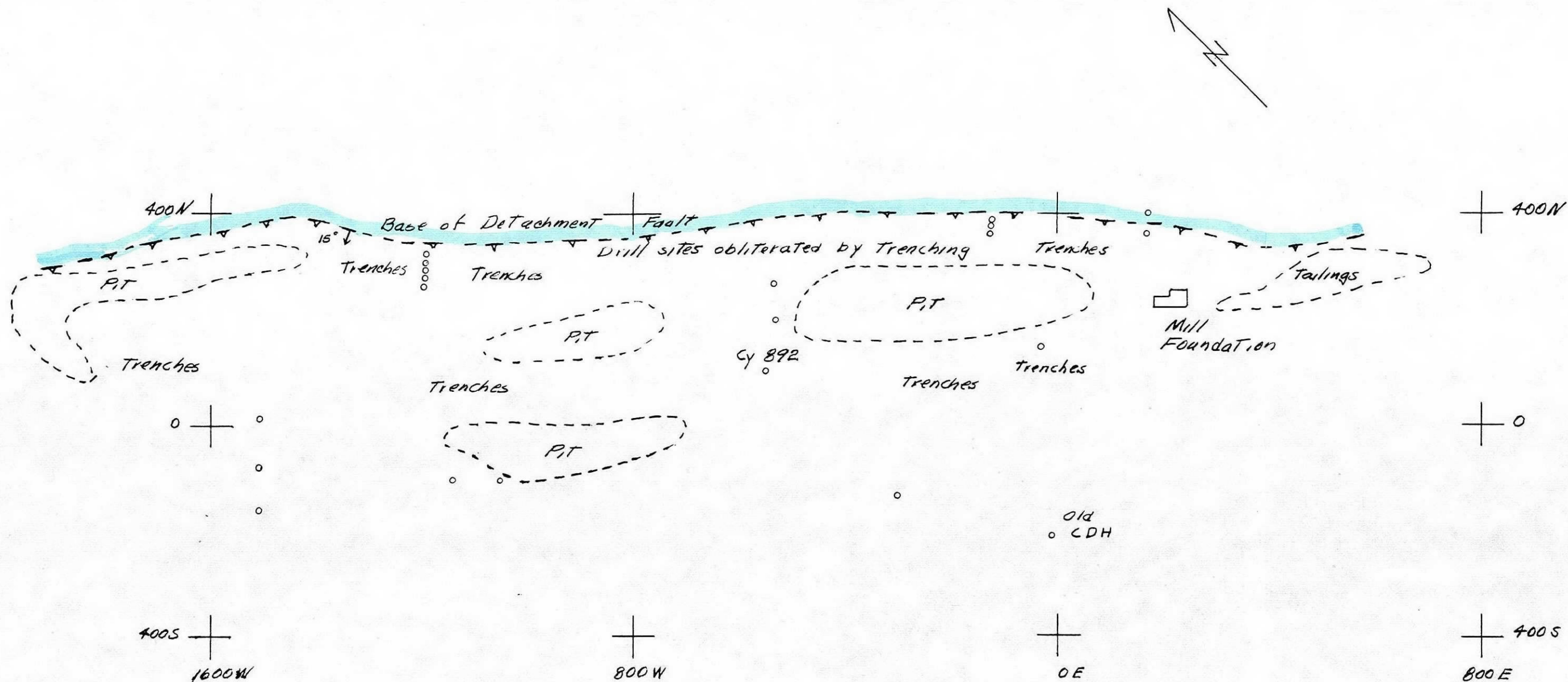
_____ 2000

_____ 1000

RM Corn May, 1991

Scale 1 inch = 1000 feet - Vertical
1 inch = 2000 feet - Horizontal

E-W Section
Bug Hills - Detrital
Valley - Block Mtn
Area



Cyclopic Mine
Gold Basin District, Mohave County, AZ

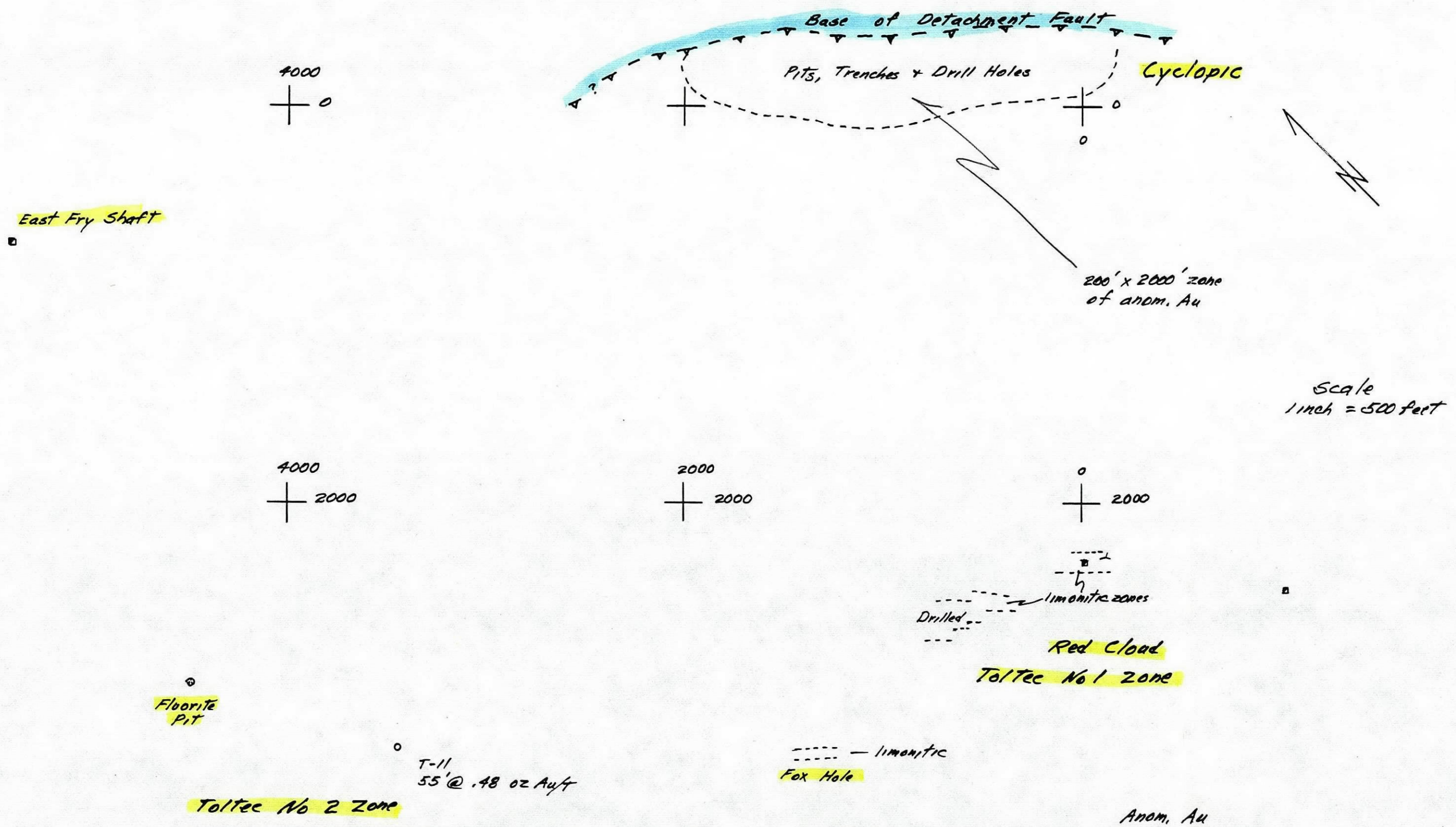
Scale 1 inch = 200 feet

RM Corn April, 1991

Cyclopic
Mine
Area

Drill Hole

Figure 9



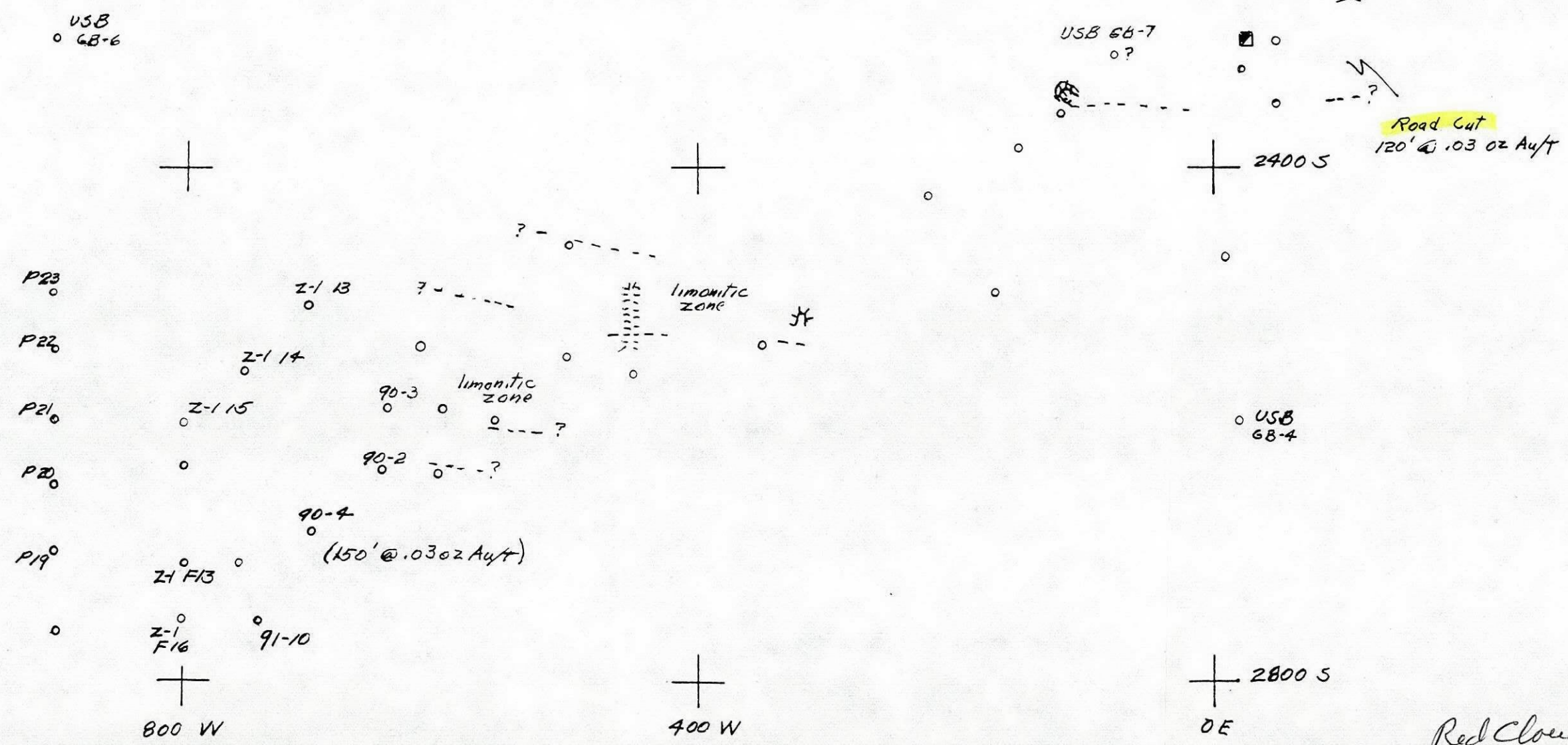
Sketch Map of Cyclopic - Red Cloud Area
Gold Basin District, Mohave County, Arizona
RM Carr April, 1991

Cyclopic - Red Cloud
(Toltec Zone 1) - Toltec
Zone 2 Area

Red Cloud Prospect
Toltec Mineralized Zone No. 1

Hole No.	Interval Feet	Length Feet	Gold Oz/T
GB-7	0 - 5	5	.05
	60 - 75	15	.11
	130 - 165	35	.026
RC-90-01	55.0 - 115.0	60.0	.039
RC-90-02	35.0 - 70.0	35.0	.039
RC-90-03	95.0 - 165.0	70.0	.027
cluding	110.0 - 135.0	25.0	.052
C-90-04	0.0 - 150.0	150.0	.032
cluding	35.0 - 55.0	20.0	.054
RC-91-09	25.0 - 135.0	110.0	.020
cluding	35.0 - 55.0	20.0	.032
cluding	95.0 - 155.0	20.0	.035
RC-91-11	115.0 - 140.0	25.0	.020
RC-91-12	165.0 - 185.0	20.0	.028
	205.0 - 230.0	25.0	.020

Toltec Mineralized Zone No. 1

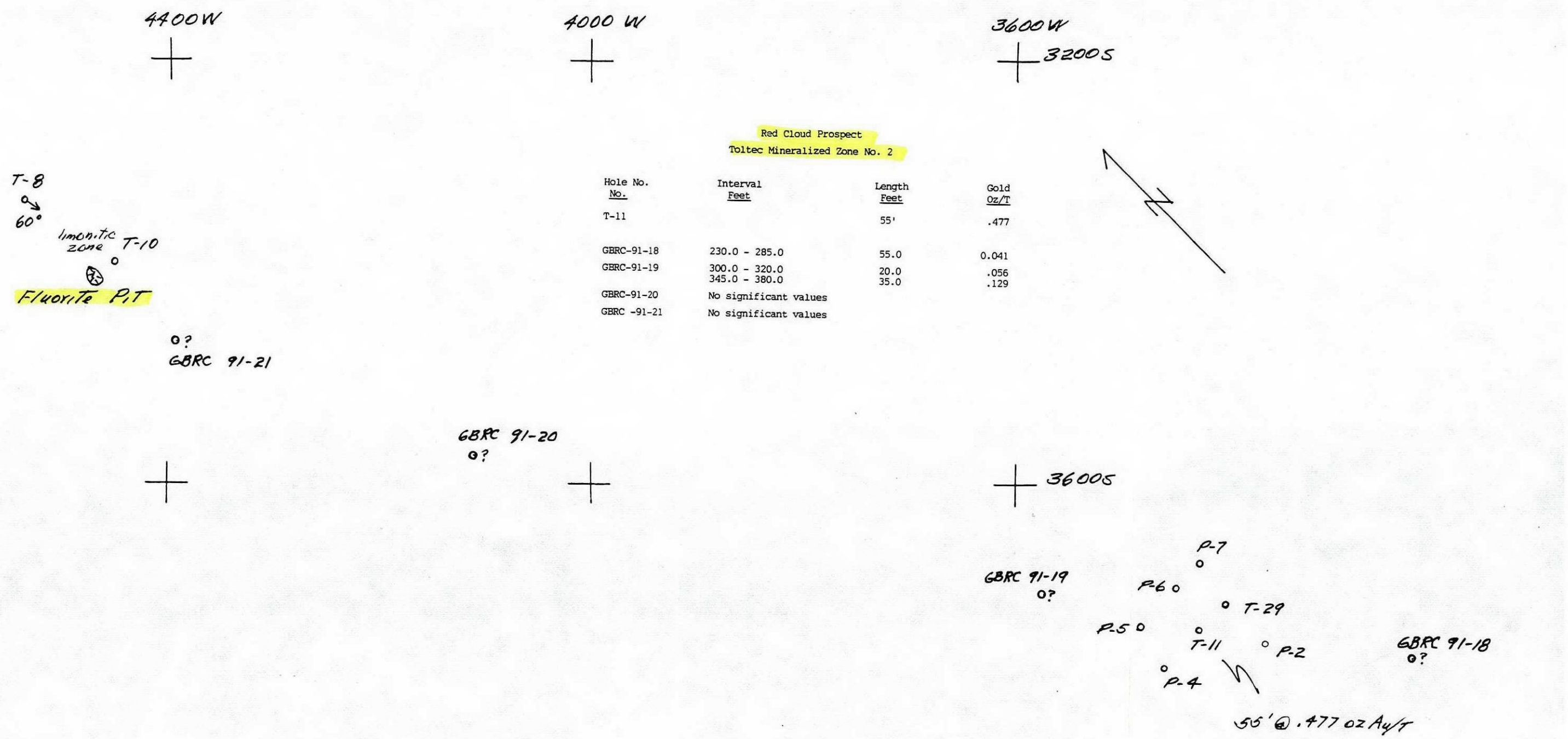


Scale
1 inch = 100 feet

- Drill Hole
- Proposed Drill Hole
- USB - US Borax Drill Hole

Red Cloud Prospect
Gold Basin District, Mohave County, AZ
RM Corn April, 1991

Red Cloud Prospect
(Toltec Zone No. 1)
with assay values



Toltec Mineralized Zone No. 2
Gold Basin District, Mohave Co., AZ

RM Corn April, 1991

Red Cloud Prospect
Toltec Zone No. 2
with assay values

scale 1 inch = 100 ft

- o Drill Hole
- o P Proposed Drill Hole
- o ? Drill Hole - location uncertain

July 3, 1991

W.L. Kurtz

revised thoughts see

R.M. Corn's Report
Geology & Exploration Potential
Gold Basin - Lost Basin Districts
Mohave County, Arizona

I submit Mr. Corn's report on the subject area.

Russ has clearly placed the mineralization within the detachment terrane model with associated high angle listric faults. The explored, and some mining of mineral zones, indicate relatively narrow northwest trending "logs," often extending several thousand feet in length within the intensely sheared detachment plate.

The Owens Mine is the only area of extensive, low-grade mineralization and alteration known to exist in the footwall portion of the detachment zone. This area has been covered in a separate report.

Known and indicated reserves-resources in the trends tested suggest only 100,000 ounces of gold and not economic at this time for substantial operations.

The study did not reveal any other direct clue for exploring through post-detachment cover which conceals 60-70% of the favorable detachment plate.

The east-west cross section segments from Cyclopic Mine to Bug Hills to Detrital Valley to Black Mountains represents a 20-mile compilation of available data and illustrates the complexity of this detachment terrane.

This compilation covering eleven $7\frac{1}{2}'$ quadrangles at a scale of $1'' = 2000'$ provides an excellent data base for future and continued exploration thoughts in this part of the Arizona detachment terrane.

JDS:mek

cc: R.L. Brown

hold for
sh
for WLK's
approval
to distribute
7/8 Returned to
JDS for rewrite

James D. Sell
James D. Sell

Memo from Schell to Kuntz

①

RMCam, May 1991. Geology and Exploration Potential of the Gold
Basin & Lost Basin Mining Districts, Mohave Co, AZ.

Attached is Mr. Corn's ^{final} ~~summary~~ report on
subject gold districts summarizing his ^{field} work and compilation
work in subject districts. Mr. Corn has ^{previously} written several ~~more~~
detailed reports ~~of~~ which are on file in Tucson along with
his 7 1/2 quad geologic maps.

The Gold Basin - Lost Basin districts were selected for
this study because of known widespread gold prospects
some of which were known to be related to the
"detachment fault" style of mineralization and therefore might
house a large, bulk amenable gold deposit.

Mr. Corn points out that ~~mineralization is contained~~
within the detachment faults
mineralization can occur up to several hundred feet
wide and thick and several thousand feet long. To date
however, ^{known} potential ore grade mineralization does not
exceed — x — x —.

Mr. Corn recommends additional exploration at the Owens
Mine and a separate report discusses this area in which ASARC
has completed an AEM survey.

~~Mr. Corn also believes the~~ In addition to the

(2)

covered areas around

Owens Main Mr. Corn believes to "Snap, Nemo"
area, the Guleyui-Ped Cloud area and the
Butcher Camp area to hold exploration potential.

Jim.

Now you need to tell me what
really can or can not be done cause

Ross gives it The University - USGS recommendation

Does topography, fault dip, etc make simple
drilling at Far Guleyui ^{under cave} a good target? And
the hell with ore control, geophysics, geochem?

I never have and never will like your
statement (you use it in various forms) "excellent
data base for future thoughts"
which is also a cop out.

see July 3 report cover
attached!

	width	Length	Depth	grade
Cycloptic 3	400	2200	50	0.04
Red Cloud Zone 1	150	1200	100	0.03
Zone 2	20	100	55	+ 0.10 0.03
Fry	5	800	100	1/2 to 1 ft.
Owens	200	1000	100	0.03
Senator	5-10	1000	100	.03 - .10
Bug Hills	5-10	1000	?	0.10

Fig. 1 Under Map

Fig 2 Generalized Geology

Table 1 Mineral Indicated/Potential

Figure 3 Schematic Sections

Figure 4. Area of an with detachment

Figure 5 NE-SW Section, Owens Mine - Senator Mine Area.

Figure 6 E-W Section Cycloptic Mine to the Bug Hills

Figure 7 E-W Section Bug Hills to the Black Mountains

Figure 8 Cycloptic Mine

Figure 9 Cycloptic - Red Cloud Area

Figure 10 Red Cloud - Toltec Zone No. 1

Figure 11 Toltec Zone 2

AS

See new
cover sheet(s)
revised 8/24/91

903

Southwestern Exploration Division

July 3, 1991

W.L. Kurtz

revised
8/29/91

R.M. Corn's Report
Geology & Exploration Potential
Gold Basin - Lost Basin Districts
Mohave County, Arizona

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JDS:mek

James D. Sell
James D. Sell

cc: R.L. Brown

I've made some notes on Ross' text
for you to look at.

JDSell

Plus

- ① The separate maps should have title/scale that
can see when folded
- ② Index map page 2 needs color/scale
- ③ Is Lake Mead Rel. withdrawn for mineral
entry
- ④ Sketch map ^{scale?} page 8 (larger version of index map)
guess it too should be colored
- ⑤ Cyclopean - Red Cloud Map
leader on 20' + 2,000
(I don't see the en echelon zones)
- ⑥ What does Cyclopean 1" = 20' map show/tell us?
- ⑦ Didn't the US Borax Lakes tell us
something negative? I don't quite remember

September 4, 1991

R.L. Brown
New York Office

Owens Mine Area
Mohave County, AZ

As you may recall, Mr. Sell had a program of evaluating the Greater Gold Basin-Lost Basin gold district in Mohave County, Arizona, about 50 miles north of Kingman, Arizona. One area, Owens Mine Area, appeared to have potential for gold deposition associated with detachment faults beneath gravel cover or beneath unmineralized fault slices. Because of equipment availability and to reduce survey costs, Windels conducted an airborne survey before completion of the geologic appraisal of the area.

Both the geologic and geophysical appraisal have been completed and Mr. Sell has prepared several memos in one of which he recommends drilling two of the three geophysical anomalies.

Mr. Sell will need to do a better job of integrating his various memos before submitting them to you with an authorization request for drilling.

All three of the anomalies should be drilled but they all involve 100% State land or a mix of State land and Santa Fe Minerals land. If we are prepared to acquire State leases then all three anomalies should be drill tested.

Please advise if Sell can acquire State land.

WLK:mek

W. L. Kurtz
W. L. Kurtz

cc: J.D. Sell

ASARCO

W.L. Kurtz

*No copies
of anything
to Brown*

*JDS Only #3/91
Mr. Kurtz. COWindels
Holding copies for
your approval to
distribute attached.*

ial

Mary

Attached is Mr. Corn's report on the geology and exploration potential of the Owens Mine Area, Gold Basin District, Mohave County, Arizona.

Previous close-spaced drilling at the Owens Mine indicated a geologic reserve of 385,000 tons at 0.026 opt gold in the detachment fault zone and also indicated weakly anomalous values (3 ft. of 0.01 opt gold or better) for a mile west of the Owens Mine.

Corn believes the mineralized detachment zone is present beneath post mineral cover north of the Owens mine, as indicated by weakly anomalous gold values in hole S-1. S-1, located nearly a quarter of a mile north of the main drilling, intercepted the detachment zone from 240-279 feet in depth, with the best assay being 3 feet at 0.009 opt gold.

As shown in the cross-sections of Attachment B, the schist outcrops north of the alluvial and fanglomerate cover are considered to be part of the exposed detachment plate. No mapping has extended into this area, but Russ reports pits and alteration patches are visible.

The HEM survey, report of August 9, 1991, by Sell-Windels, just tipped the exposed schist on the north, and the HEM anomalous zones are both under the gravel-fanglomerate cover, as shown on Attachment A.

As noted on Attachment C, the HEM anomalies are Santa Fe Minerals or State lease lands with the surface either fee or state. The Section 36 anomaly may still be held by R.C. Johnson under a State prospecting permit.

As stated in the August 9 memo, several holes are recommended in these zones, but with the tight land position, abundant negotiations will be necessary.

JDS:mek
Att.

cc: ~~R.C. Brown~~
C.O. Windels

James D. Sell
James D. Sell

*Mek:
looks like we only
send copy of this to
FILE
COWindels
JDSell*

*(NCHB)
9-10-91*

JS

September 3, 1991

W.L. Kurtz

R.M. Corn's Report
Geology & Exploration Potential
Owens Mine Area
Gold Basin District
Mohave County, Arizona

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JDS:mek
Att.


James D. Sell

cc: ~~XXXXXXXXXX~~
C.O. Windels

GEOLOGY AND EXPLORATION POTENTIAL

OF THE OWENS MINE AREA

GOLD BASIN MINING DISTRICT, MOHAVE COUNTY, ARIZONA

RUSSELL M. CORN

May, 1991

**GEOLOGY AND EXPLORATION POTENTIAL
OF THE OWENS MINE AREA
GOLD BASIN MINING DISTRICT, MOHAVE COUNTY, ARIZONA**

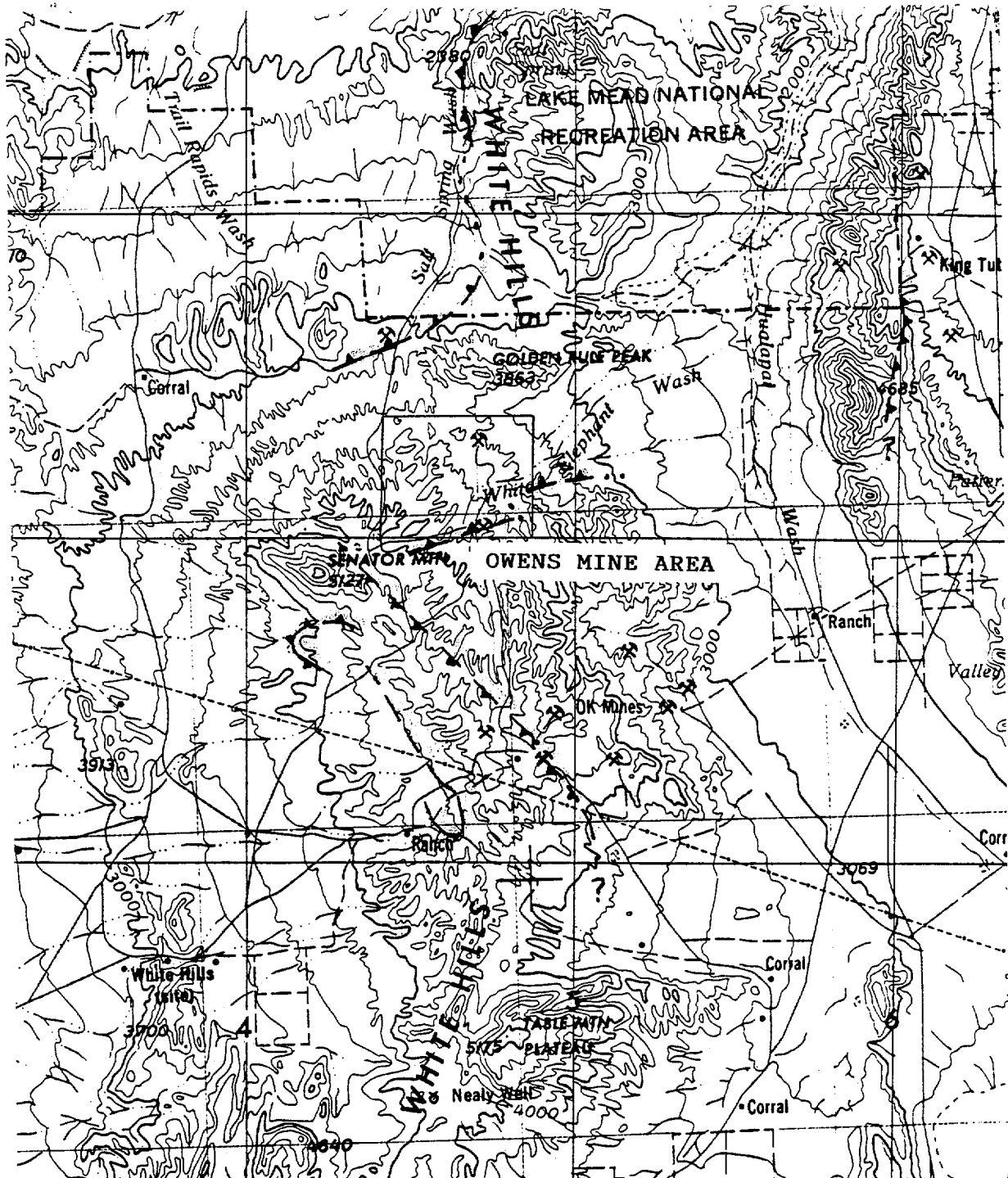
Summary

The Owens Mine Area is recommended as an area of exploration interest that has a favorable potential for concealed, detachment-hosted, bulk-tonnage gold mineralization. Appreciable gold mineralization and anomalous gold values occur adjacent to post-ore cover in the lower part of the detachment fault zone over a distance of more than a mile in the vicinity of the Owens Mine. Previous drilling in the area was concentrated on and in the vicinity of exposed mineralization and exploration was inhibited both by the post-ore cover and the land situation, since most of the covered area of interest is owned by the State or Santa Fe. Compiled generalized geologic data and drill hole data from Mapco and ACNC indicates that the detachment fault zone should be present beneath most of the area of post-ore cover and that the cover will vary from 100 to perhaps 300 feet in thickness. Known gold mineralization at the Owens Mine is a remnant of more extensive mineralization preserved in the footwall of a post-mineral, low-angle fault superimposed on the detachment fault zone. Geologic and drill hole data indicate that the displaced detachment fault zone and associated gold mineralization should be present beneath cover north and east of the area drilled. Detailed geologic mapping of the area is recommended to complement planned airborne geophysical surveys. A thorough appraisal of the land situation and evaluation of the geologic and geophysical data is recommended prior to initiating drilling in the area. A suggested initial drilling program, dependent on these evaluations is estimated to cost approximately \$50,000, and would consist of three fences of shallow, 300 to 500 foot drill holes designed to test geophysical anomalies, determine the thickness of cover, the position of the detachment fault zone, and the presence of alteration and mineralization within it.

General

The Owens Mine Area is located in the northern part of the Gold Basin Mining District near the NE corner of T28N, R19W. Mineralization at the Owens Mine is characterized by gold and copper-specularite in sheared and altered rocks within and in the footwall of the Gold Basin Detachment Fault Zone and is preserved in the footwall of a post-mineral, low-angle fault. The extensive gold mineralization in the area is adjacent to relatively thin post-mineral cover and the area offers exploration potential for concealed, bulk-tonnage, detachment-hosted gold mineralization. The Owens Mine was located prior to 1890 and the property consists of five unpatented claims on 80 acres that was excluded from the Santa Fe Railroad land grant. The mine workings include three closely-spaced shafts, two adits and numerous cuts. Mine production is not known, but was probably less than 1,000 tons of gold-copper ore.

During the 1980's the Owens Mine area was extensively explored by Mapco, Nerco, and ACNC (American Copper and Nickel Co.). Mapco acquired the property in the early 1980's and drilled 53 shallow holes in the vicinity of the Owens Mine. Nerco continued the exploration program after they acquired Mapco's mineral properties in 1984 and ACNC obtained the property in 1985 as part of a larger joint venture



Index Map Showing Location of

Owens Mine Area

Gold Basin Mining District, Mohave County, Arizona

--- Detachment Fault

Owens Mine Area

with Nerco. During 1985 - 1987 ACNC mapped the property on a 1:6,000 scale, carried out extensive soil geochemical sampling, ran approximately six line miles of inconclusive IP and magnetic surveys, and drilled 5 holes in Section 2 on the western extension of the Owens mineralization and 2 holes in the lower part of the detachment fault zone in Section 10 approximately 2 miles southwest of the Owens Mine. Their drilling results were discouraging and ACNC subsequently terminated the joint venture. Nerco terminated their State leases and abandoned their claims in 1987 and most of the land has since been re-staked and acquired by various individuals. The previous drilling by Mapco-Nerco and ACNC was concentrated on exposed mineralization in the lower part of the detachment fault zone adjacent to post-ore cover. Exploration north and east of the Owens Mine was limited by the land situation since they did not acquire any Santa Fe land. Mapco's detailed drilling indicated a resource of 385,000 tons @ .026 oz Au/T at the Owens Mine and ACNC's drilling several thousand feet to the west encountered extensive but weak gold mineralization.

Accompanying this report are a generalized geologic map and sections of the area, a generalized land map and a sketch map and sections showing the distribution of mineralization and drill holes at the Owens Mine. The geologic data presented is generalized and is based on data compiled from several different sources supplemented by limited field observations and Mapco drill hole data. The ACNC drilling results were reviewed in an earlier report.

Geology

The Gold Basin Detachment Fault Zone is the major geologic feature of the Owens Mine area. The fault zone is a 200 to 400 foot thick, poorly exposed, sub-horizontal zone of shearing and closely-spaced coalesced listric faults. Basement rocks beneath the fault are Precambrian granites and amphibolite grade gneiss. The detachment fault zone can be best visualized as a separate lithotectonic unit, incorporating numerous thin fault slivers and slices of the various Precambrian rocks, underlain by competent, cohesive basement rocks, and overlain by relatively thick fault-bounded slices of structurally-rotated Tertiary volcanics and fanglomerate as well as the various Precambrian units.

The detachment fault zone is concealed and probably preserved beneath the extensive Quaternary alluvium and Late Tertiary fanglomerate cover north of the Owens Mine. Limited exposures of structurally rotated Tertiary fanglomerate indicate that the upper plate of the detachment fault zone is present one to two miles northwest of the Owens Mine and may occur as isolated remnants preserved in down-dropped fault blocks beneath the alluvial and late fanglomerate cover. The detachment fault and upper plate Tertiary fanglomerate are also exposed on the south side of White Elephant Wash approximately 1½ miles northeast of the Owens Mine. Mapco's drill data indicates that the detachment fault has been stepped up beneath cover by post-detachment faulting and suggests that the fanglomerate at depth north of the mine may also be the older Tertiary fanglomerate. The wide, flat valley of White Elephant Wash is believed to be a topographic reflection of the non-resistant and easily eroded detachment fault zone with the intensely sheared granite and metamorphic rocks exposed in Section 30 reflecting a position in the lower part of the fault zone.

The Late Tertiary fanglomerate and Quaternary alluvium appear to have been deposited on a surface of moderate to gentle relief. The estimated thickness of the Quaternary alluvium is approximately 30 to 50 feet and the post-ore fanglomerate varies in probable thickness from 100 feet along valleys up to 300 feet beneath the higher ridges.

The Mapco and ACNC drill data and exposures at the Owens Mine indicate that post-mineral, high-angle faults offset mineralization and the detachment fault. Post-mineral fault offset is probable along other northeast-trending faults but can not be defined without detailed mapping of the area. As shown on the accompanying sketch and sections a prominent low-angle fault at the mine offsets mineralization and superimposes unaltered, lithified fanglomerate against intensely-sheared, mineralized gneiss. A parallel high-angle (?) fault four hundred feet to the north also offsets the detachment fault zone and the fanglomerate. ACNC mapped the fault adjacent to their drill holes in Section 2 as the same fault as that down-dropping fanglomerate against gneiss at the Owens Mine. However, their descriptions of unaltered and unmineralized gneiss beneath the fanglomerate suggests instead that the pre-fanglomerate movement may have uplifted the unmineralized footwall of the detachment fault zone, as is also suggested by the wide exposure of footwall sheared gneiss farther to the west in Section 3. Definition of fault offset of the detachment fault zone and mineralization is complicated by the difficulty in separating the two Tertiary fanglomerate units and indications that there was fault offset prior to deposition of the Late Tertiary fanglomerate as well as later.

Mineralization

The mineralization at the Owens Mine is described in old reports as a wedge-shaped, 700 foot wide, 50 to 150 foot thick zone of closely-spaced veins and veinlets containing gold and copper values. The mineralized zone strikes northwest, is near the base of the detachment fault zone, includes siderite-altered and intensely-sheared gneiss, and is a probable preserved remnant of more extensive mineralization cut off by a low-angle, post-mineral fault that juxtaposes unmineralized fanglomerate against the mineralized gneiss. As shown on the accompanying sketch map, Mapco's drilling was concentrated in the immediate vicinity of the old mine workings and their drill indicated resource of 385,000 tons @ .026 oz Au/T is located at shallow depth in this area.

Brief examinations indicate that the gold and copper-specularite mineralization is associated with a low-sulfide, siderite-hematite type of alteration with intensity of alteration and mineralization diminishing rapidly with increasing distance south of the workings and with depth below the detachment fault zone. Post-mineral fanglomerate and alluvium conceal the detachment fault and associated alteration to the north and east but isolated exposures and numerous drill holes indicate that the detachment fault zone and associated alteration and mineralization continue for more than a mile west of the Owens Mine.

Limited observations suggest the presence of three superimposed and perhaps related types of mineralization in the area, localized and hosted by the permeable, sheared rocks of the detachment fault zone.

1. Quartz-siderite-chalcopyrite-specularite seams, veinlets, and irregular replacements.
2. Vuggy quartz-pyrite veins and veinlets.
3. Diffuse, non-vein gold mineralization with little associated sulfides or silica and generally similar to the detachment-hosted mineralization near the Cyclopic Mine.

Judging from the selected ore piled near the old workings, the vuggy quartz-pyrite veins and veinlets contain substantial gold values and may represent feeder veins in the footwall of the detachment fault zone. The ACNC drill data indicates that the extensive, weak gold mineralization hosted by the detachment fault zone in Section 2 west of the Owens Mine is not associated with copper or specularite or appreciable introduced silica or sulfides, but instead is more closely associated with brecciated mafic dikes, carbonate alteration and increased shearing and brecciation. The limited data suggests that detachment-hosted gold mineralization in the Owens area is complex and like mineralization at the Cyclopic-Red Cloud properties, may not be directly associated with appreciable amounts of introduced silica or sulfides.

Mapco's Drilling Results

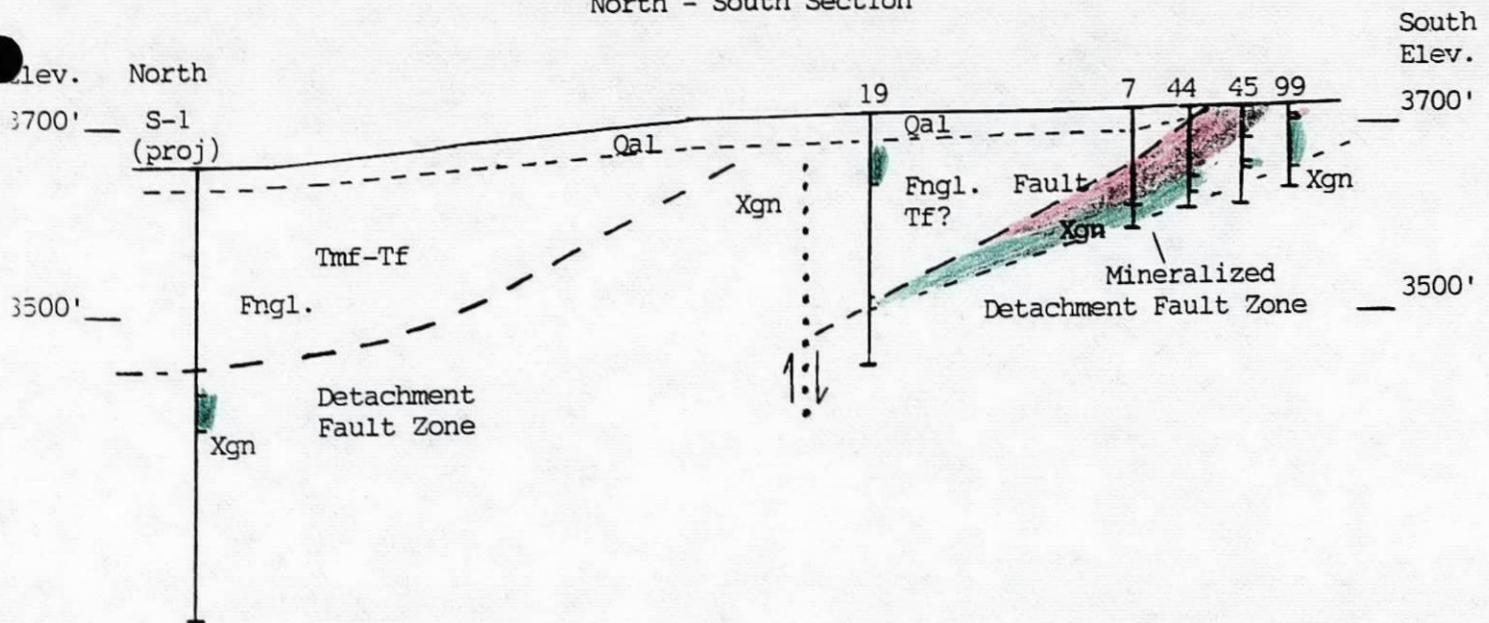
Mapco drilled 53 shallow holes in the Owens Mine area in 1983 and 1984 evaluating the potential of the near-surface mineralization at the mine and along the trace of the detachment fault zone to the west. The distribution of drill holes is shown on the accompanying 2400 scale sketch map and the results are illustrated on the following tabulation and on the map and sections.

Gold mineralization at the Owens Mine is preserved in the footwall of a low-angle, post-mineral fault that places unmineralized, lithified fanglomerate against altered and mineralized gneiss. As illustrated on the accompanying sections, the fault cuts off the down-dip projection of better grade mineralization and there is little potential for substantial additional tonnage in the near vicinity of Mapco's drill holes. North-south and northeast-trending, post-mineral faults also offset the detachment fault zone and mineralization. Mapco's data indicates that the low-grade mineralization in the detachment fault zone has continuity between holes and is enveloped in a larger volume of sheared and altered gneiss with anomalous gold values. Intercepts at greater depth and distance from the fault are characterized by erratic spikes of higher values derived from thin veins. All drill holes were vertical and there apparently was no attempt to check the area of obvious steeply-dipping veins and veinlets near the old workings with angle drill holes.

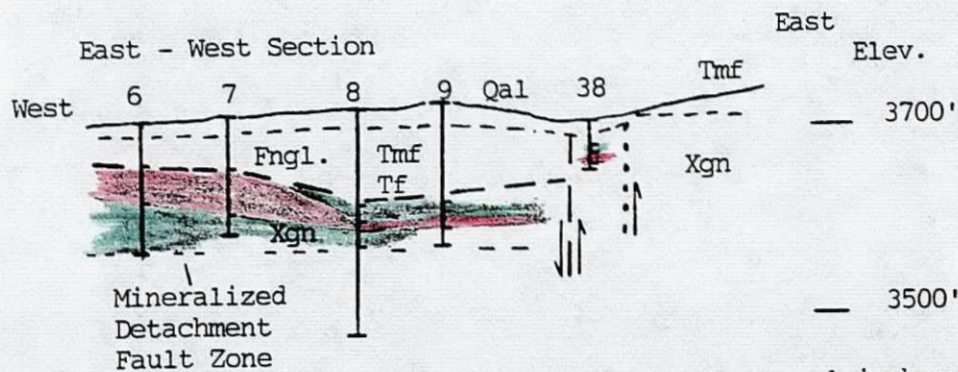
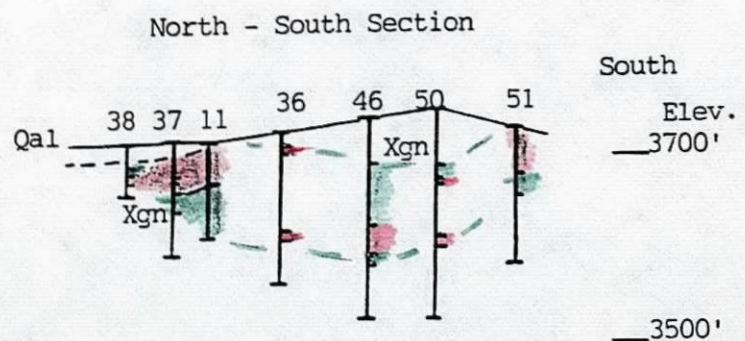
Mapco did not recognize the significance of the detachment faulting and did not attempt to expand the area of mineralization any significant distance to the north and east. They show a north-south probable post-mineral fault as the eastern limit of mineralization. All of the holes adjacent to this fault intersected appreciable gold values indicating that mineralization should continue in the offset detachment fault zone where it is preserved beneath cover to the north and east.

With the exception of drill holes 83-19 and 83-S-1, located approximately 400 feet and 1200 feet north of the mine, all of Mapco's drilling was located in close proximity to exposures of sheared and altered gneiss in the lower part of the de-

- 6 -
 Sections Through Mapco Drill Holes at Owens Mine
 Gold Basin District, Mohave County, Arizona
 North - South Section



Gold Mineralization
 > .01 oz Au/T
 < .01 oz Au/T



Scale 1 inch = 200 feet
 Horizontal = Vertical

R.M. Corn May, 1991

MAPCO DRILL HOLES
OWENS MINE PROJECT

0.01 oz/T Cut-off

HOLE #	TRUE THICKNESS (ft)	AVG. GRADE (oz/T)	Mineralized Interval	TD	Base Fangl.	Anomalous Interval
OM 83-S-1	Anomalous Zone		240-279	486	215	240-279
OM83-4	24	.022	27-63	303	Qa1-24	63-112
OM83-5	26	.028	33-78	105	Qa1-24	
OM83-6	26	.024	51-86	144	48	86-144
OM83-7	31	.028	60-102	126	57	102-126
OM83-8	7	.056	120-129	240	96	102-147
OM83-9	15	.063	114-132	150	90	105-114 132-TD
OM83-10	24	.041	27-90	117	Qa1-27	90-117
OM83-11	24	.023	0-45	105		45-TD
OM83-12	28	.034	3-54	78	Qa1-3	54-TD
OM83-16	Not Anomalous			183	123	
OM83-19	Not Anomalous			264	201	27-74
OM83-23	Not Anomalous			159	69	192-206
OM83-28	3	.015	48-51	114	Qa1-30	33-93
OM83-29	3	.013	99-102	141	Qa1-24	75-112
OM83-33	3	.013	12-15	165		3-165
OM83-34	5	.020	108-114	147	Qa1-30	30-147
OM83-35	2	.010	48-51	144	Qa1-12	6-144
OM84-36	9	.029	6-12	162		
OM84-37	20	.063	105-117	120	Qa1-15	54-75
OM84-38	8	.028	18-39 45-54 36-45	54	Qa1-18	
OM84-39	Not Anomalous			126	60	
OM84-40	Not Anomalous			165	Qa1-27	
OM84-41	Not Anomalous			126	60	
OM84-42	2	.011	24-27	195		57-60
OM84-43	29	.029	42-90	204	30	90-100
OM84-44	31	.019	24-74	105	Qa1-18	74-93
OM84-45	16	.012	3-36	105		66-69
OM84-46	17	.188	102-105 114-147	219		51-102 147-153
OM84-47	Not Anomalous					
OM84-48	Not Anomalous			117	93	
OM84-49	3	.014	6-9	87		9-78

Owens Mine Area
Mapco Drill Holes

Hole No.	Td	Base Fngl.	Mineralized Interval	Feet	Avg. Grade oz Au/T	Anomalous Interval
OM 84-50	225		75-78 138-147	3 9	.023 .021	
OM 84-51	144		9-51	42	.016	51-75
OM 84-52	204		42-48 108-111	6 3	.019 .012	90-126
OM 84-53	183		84-90 111-114	6 3	.016 .038	12-39 111-141
OM 84-54	175	Qal-18	No mineralization			
OM 84-55	155	50	No mineralization			
OM 84-56	185	102	No mineralization			
OM 84-57	125	27	No mineralization			
OM 84-58	85	30	No mineralization			
OM 84-59	145		35-40	5	.012	
OM 84-60	145	Qal-15	No mineralization			
OM 84-61	145	60	No mineralization			
OM 84-62	185	70	No mineralization			
OM 84-63	240	120	150-160	10	.011	120-170
OM 84-64	260	88	No mineralization			105-110 205-210
OM 84-65	185		20-50	30	.015	50-70
OM 84-66	245		10-15 170-185	5 15	.013 .013	5-215
OM 84-67	105	55	No mineralization			60-70
OM 84-68	285	50	No mineralization			50-85
OM 84-69	115	105	No mineralization			
OM 84-70	215		No mineralization			20-35

MAPCO DRILL HOLES
OWENS MINE PROJECT - SUMMARY

HOLE #	0.01 oz/T Cut-off		0.03 oz/T Cut-off	
	TRUE THICKNESS (ft)	AVG. GRADE (oz/T)	TRUE THICKNESS (ft)	AVG. GRADE (oz/T)
OM 83-S-1	Anomalous Zone 240-279			
OM83-4	24	.022	8	.035
OM83-5	26	.028	8	.051
OM83-6	26	.024	5	.059
OM83-7	31	.028	13	.046
OM83-8	7	.056	5	.078
OM83-9	15	.063	8	.096
OM83-10	24	.041	8	.098
OM83-11	24	.023	5	.053
OM83-12	28	.034	13	.052
OM83-16	Not Anomalous		--	--
OM83-19	Not Anomalous		--	--
OM83-23	Not Anomalous		--	--
OM83-28	3	.015	--	--
OM83-29	3	.013	--	--
OM83-33	3	.013	--	--
OM83-34	5	.020	2	.030
OM83-35	2	.010	--	--
OM84-36	9	.029	3	.048
OM84-37	20	.063	12	.092
OM84-38	8	.028	5	.039
OM84-39	Not Anomalous		--	--
OM84-40	Not Anomalous		--	--
OM84-41	Not Anomalous		--	--
OM84-42	2	.011	--	--
OM84-43	29	.029	13	.042
OM84-44	31	.019	5	.037
OM84-45	16	.012	--	--
OM84-46	17	.188	8	.392
OM84-47	Not Anomalous		--	--
OM84-48	Not Anomalous		--	--
OM84-49	3	.014	--	--

tachment fault zone. Results from these two holes indicate that the detachment fault zone is stepped up beneath cover by post-detachment faulting, that the fanglomerate cover remains relatively thin over a substantial area, and that alteration and weakly anomalous gold values continue to be associated with the detachment fault zone.

Land

The land situation in the Owens Mine Area is shown on the attached generalized land map. The area is within the railroad "checker board" of Mohave County and alternate sections are owned by the Santa Fe Railroad. The Owens Mine property itself consists of 80 acres, five unpatented claims owned by Helen Martin, and is surrounded by mineral holdings of Santa Fe and the State of Arizona. The Mapco-Nerco claims in Section 10, T28N, R19W and Sections 26 and 34, R19W were abandoned in 1987 and have since been relocated by several different individuals. The Nerco State leases on Section 2, T28N, R19W and Section 36, T29N, R19W were also terminated in 1987 and Prospecting Permits on the State land are held by R.C. Johnson, Lakewood, Colorado.

Data from ACNC indicates that they tried to obtain leases from Santa Fe but lost interest after Santa Fe indicated that the land would be available only under a joint venture arrangement. This land relationship helps to explain the lack of drilling on Santa Fe ground north and east of the exposed mineralization. Santa Fe's policy on land in the area has since changed and they have leased several sections at Gold Basin to the Toltec-Consolidated Rhodes venture.

Any substantial exploration effort directed toward the concealed detachment fault zone in the Owens Mine area would require leases from the State and Santa Fe. A thorough appraisal of lease terms, costs, and problems is advised prior to investing substantial time and exploration effort in the area.

Recommendations

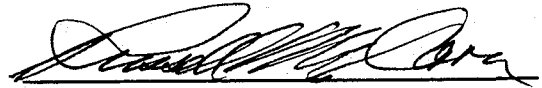
The Owens Mine Area is recommended as an area of exploration interest that has a favorable exploration potential for concealed, detachment-hosted, bulk-tonnage gold mineralization. The area exhibits extensive gold mineralization adjacent to relatively thin post-ore cover and previous exploration was inhibited by both cover and the land situation.

Airborne geophysical surveys are planned for the approximately three square mile area where post-ore cover conceals the detachment fault zone. Detailed geologic mapping and geochemical sampling around the periphery of the post-ore cover is recommended to complement and aid in the interpretation of the geophysical data.

A suggested initial drilling program, dependent on evaluation of the additional geologic and geophysical data, is estimated to cost approximately \$50,000 and would consist of three north-south fences of shallow (300 to 500 feet) drill holes designed to test any geophysical anomalies and determine (1), the thickness of post-ore cover (2), the position of the detachment fault zone beneath cover, and (3), the presence and distribution of alteration and mineralization in the detachment fault zone. The suggested drill hole fences are (1), a fence of shallow holes across the concealed fault zone east of the Owens Mine near the northeast corner of

Section 1 (2), a fence of three or four widely-spaced holes located in Section 36 north of the Owens Mine and (3), a similar fence of widely-spaced holes across the southeastern part of Section 35.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Russell M. Corn", written over a horizontal line.

Russell M. Corn

GEOLOGIC MAP OF THE OWENS MINE AREA
Gold Basin Mining District, Mohave County, Arizona
Scale 1 inch = 1,000 feet
R.M. Corn May 1991

EXPLANATION

QUATERNARY

Qal - Alluvium
Qgo - Older gravels

LATE TERTIARY

Tmf - Fanglomerate

STRUCTURAL DISLOCATION SURFACE

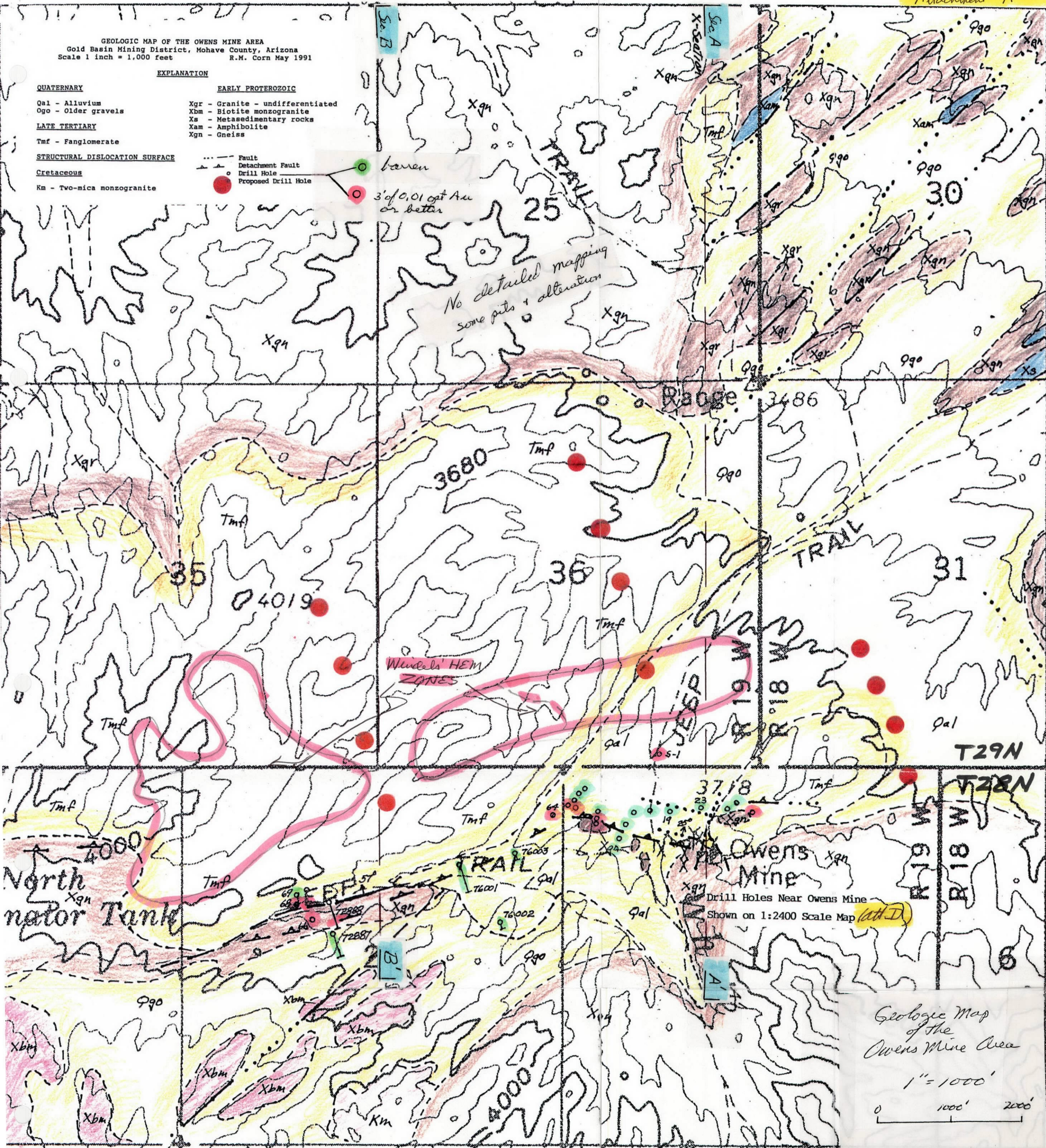
Cretaceous

Km - Two-mica monzogranite

EARLY PROTEROZOIC

Xgr - Granite - undifferentiated
Xbm - Biotite monzogranite
Xs - Metasedimentary rocks
Xam - Amphibolite
Xgn - Gneiss

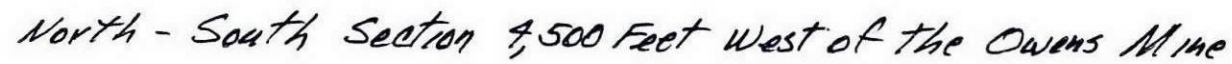
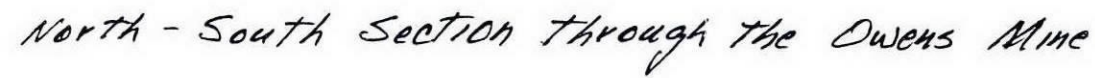
--- Fault
--- Detachment Fault
o Drill Hole
o Proposed Drill Hole



Geologic Map
of the
Owens Mine Area

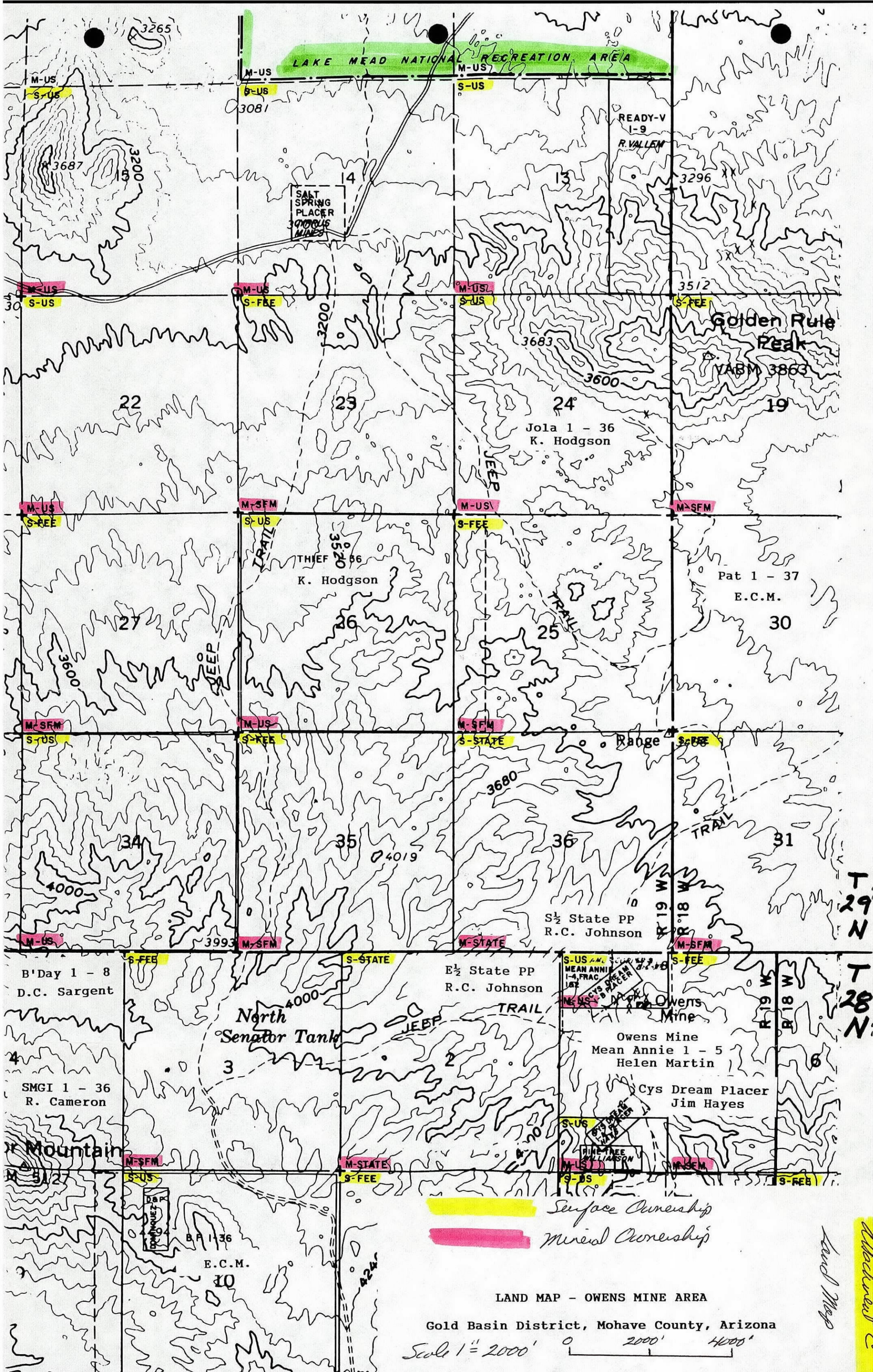
1" = 1000'

0 1000' 2000'



N-S Sections
thru
Owens Mine
area

RM Corn May, 1991

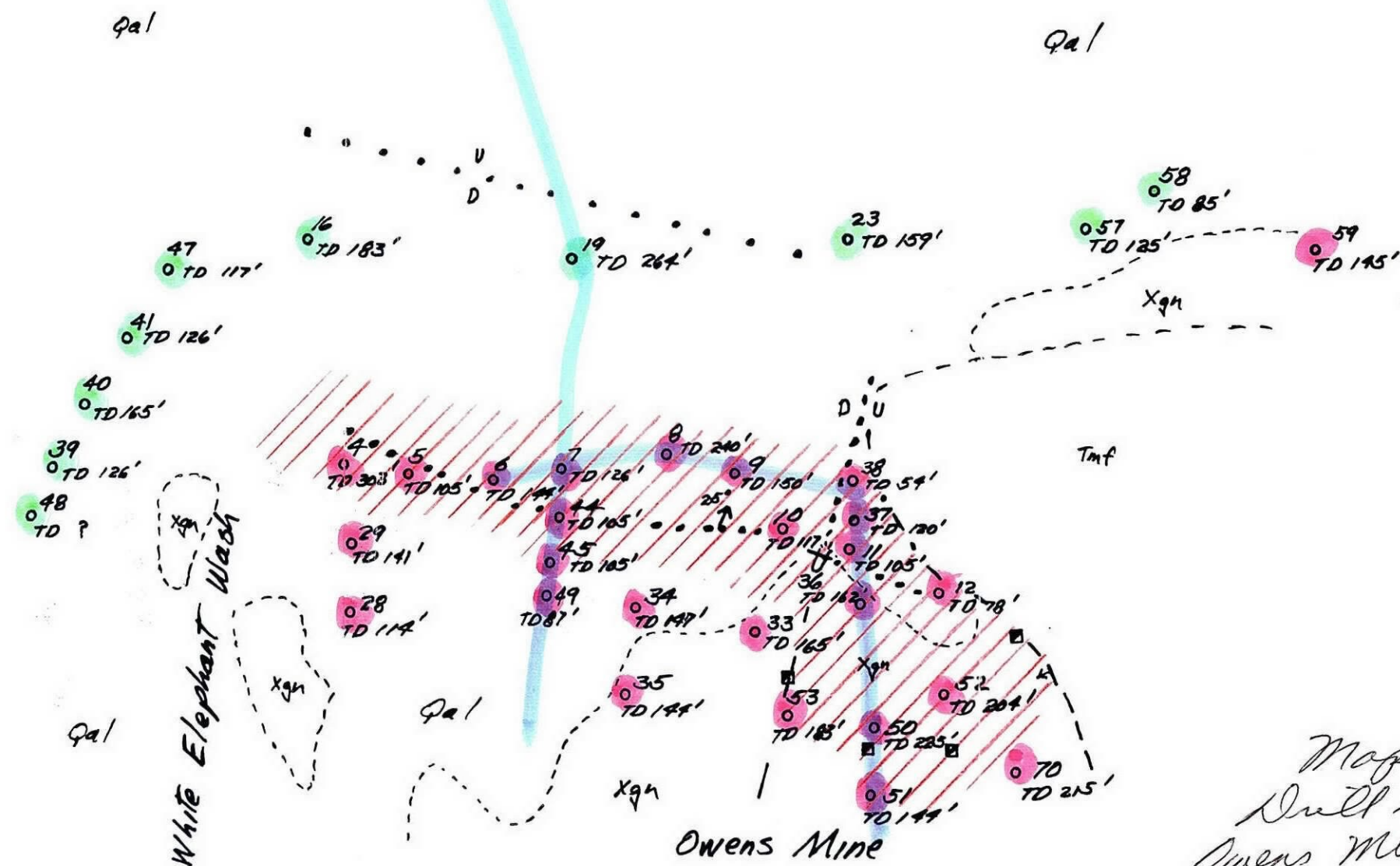
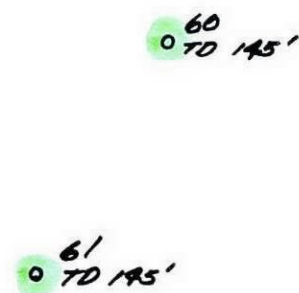
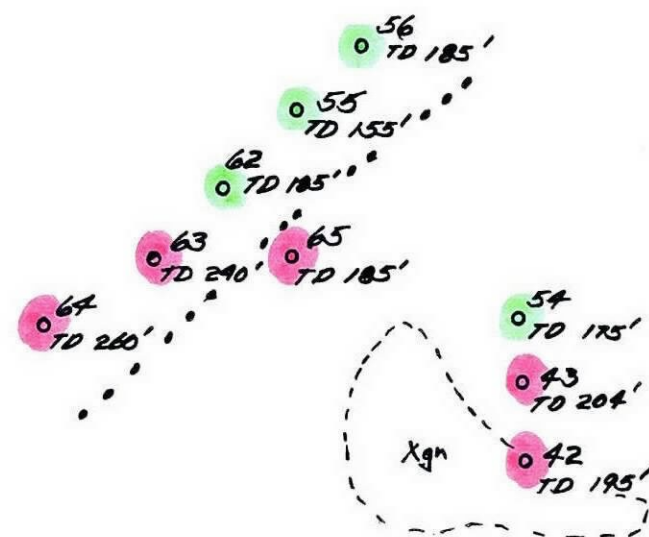


T29 N
Sec 2 | Sec 1
T28 N

R19 W
Sec 36



Section Lines
Figure 2, Text.
page 6 of Text.



Sketch Map of Drill Holes at Owens Mine
Gold Basin District, Mohave County, Arizona

- //// Mineralized Area
- Fault
- TD Mapco Drill Hole
- 3' of 0.01000 Au or better

Scale 1 inch = 200 feet

RM Corn May, 1991

Geology modified from Mapco Data

9-8-91

MAPS, ETC., ROLLED AND FILED IN DRAFTING DEPARTMENT
FROM THE FOLLOWING REPORTS
WHICH ARE FILED IN SWED DISTRICT FILES

Corn and Ahern, May 1984. Drilling Results Gold Basin Prospect, Mohave Co., Arizona, 4 page report with Appendix A,B,C,D and E. (76 pages total)
US Borey.

- Item 1. Sketch Map, Gold Basin Project. 1" = 200' *R. Ahern March '84*
 2. Cross Sections A-A', B-B', C-C', and D-D'. 1" = 200' "
 3. Cross Section E-E'. 1" = 200' "

Loghry, November 1, 1990, revised January 15, 1991. Toltec Resources Ltd., Gold Basin Project, Mohave County, Arizona, 1990 Drilling Program, 21 pages plus Drill Hole Logs T-1 thru T-29, and assay sheets for T-1 thru T-29. (1" book).

- Item 1. Prel. Geologic Map No. 1 Gold Zone. *Rev. 9/19/90* 1" = 100'
 2. Drill Hole Map, No. 1 Gold Zone. " 1" = 100'
 3. Drill Hole Map, Gold Basin Project. *Rev. 1/15/91* 1" = 100'
 4. Red Cloud - No. 1 Zone, Section 0 SE. *12/28/90* 1" = 50'
 5. " " " " " , Section 50 SE. *10/30/90* 1" = 50'
 6. " " " " " , Section 100 SE. " 1" = 50'
 7. " " " " " , Section 150 NW. *12/20/90* 1" = 50'
 8. " " " " " , Section 180 SE. *9/23/90* 1" = 50'
 9. " " " " " , Section 450 SE. *10/22/90* 1" = 50'
 10. " " " " " , Section 550 SE. *10/24/90* 1" = 50'
 11. " " " " " , Section 675 SE. *12/15/90* 1" = 50'
 12. " " " " " , Section 1900 E. *9/25/90* 1" = 50'
 13. " " " " " , Section 1980 E. " 1" = 50'
 14. " " " " " , Section 2135 E. *10/23/90* 1" = 50'
 15. " " " " " , Section 2430 E. *1/5/91* 1" = 50'
 16. Map of No. 2 Zone *10/16/90* 1" = 500'
 17. Fluorite Pit, No. 2 Zone, Geology & Drill Holes *7/29/90* 1" = 50'
 18. Bathtub Saddle, Prelim. Geologic Map, No. 2 Zone drill holes *8/25/90* 1" = 50'
 19. Fox Hole, Section T6-T7 *9/30/90, Rev. 1/14/91* 1" = 50'
 20. Fluorite Pit, No. 2 Zone, Section T8-T10 *10/20/90* 1" = 50'
 21. No. 2 Zone, Section T11-T12 *10/14/90* 1" = 50'

Mosher, G.Z., March 18, 1991, Phase One Report on the Gold Basin Property, Sections 24, 25, 30, 31, and 36, T28N, R18 & 19W, Mohave County, Arizona, for Consolidated Rhodes Resources. (40 pages)

- Item 1. Property Map, North Half, Grid Line Map 1" = 400'
 2. Sample Location Map, Figure 5.01 1" = 400'
 3. Geology Map, Figure 6.01 1" = 400'
 4. Surface Plan Map, Figure 7.01 1" = 50'
 5. Longitudinal Section L.S., 0N, Figure 7.02 1" = 50'
 6. " " " " , 1N, Figure 7.03 1" = 50'
 7. " " " " , 2N, Figure 7.04 1" = 50'

MAPS, ETC., ROLLED AND FILED IN DRAFTING DEPARTMENT
FROM THE FOLLOWING REPORTS
WHICH ARE FILED IN SWED DISTRICT FILES

Item 8A.	Longitudinal Section L.S., 3N, Figure 7.05	1" = 50'
8B.	Drill Section 6+60W, Figure 7.06	1" = 20'
9.	" " 7+20W, Figure 7.07	1" = 20'
10.	" " 7+60W, Figure 7.08	1" = 20'
11.	" " 8+10W, Figure 7.09	1" = 20'
12.	" " 8+85W, Figure 7.10	1" = 20'
13.	Level Plan 4550', Figure 7.11	1" = 50'
14.	" " 4530', Figure 7.12	1" = 50'
15.	" " 4510', Figure 7.13	1" = 50'
16.	" " 4490', Figure 7.14	1" = 50'
17.	" " 4470', Figure 7.15	1" = 50'
18.	" " 4450', Figure 7.16	1" = 50'
19.	" " 4430', Figure 7.17	1" = 50'
20.	" " 4410', Figure 7.18	1" = 50'
21.	" " 4390', Figure 7.19	1" = 50'
22.	" " 4370', Figure 7.20	1" = 50'
23.	" " 4350', Figure 7.21	1" = 50'
24.	Red Cloud Adit Sample Locations, Figure 7.22	1" = 20'
25.	Fox Hole Zone, Figure 7.23	1" = 25'
26.	Drill Section Line 34W, No. 2 Zone, Figure 7.24	1" = 50'
27A.	Soil Geochemistry, North Half, Cyclopic Mine Area, Figure 8.1A	1" = 400'
27B.	Soil Geochemistry, South Half, Red Cloud etc. Area. Figure 8.1B	1" = 400'
28.	Gold Basin Soil Geochemistry, ppb vs. Cumulative %, graph. Figure 8.2	--
29.	Cyclopic Project Magnetometer Contour Map on grid overlay	1" = 600'
30.	Cyclopic Project Frase Filter VLF Map on grid overlay	1" = 600'

Mosher and Bittle, May 3, 1991, Phase Two Report on the Gold Basin Property, Mohave County, Arizona, for Consolidated Rhodes Resources, 16 pages, plus Appendices 10.1 thru 10.3. (58 pages total)

Item 1.	Drill Hole Map, Gold Basin Project	1" = 100'
2.	Map of No. 2 Zone, Toltec Resources	1" = 500'
3.	Location Map, Phase Two Geochemistry Grid, Figure 3.0	1" = 400'
4.	Soil Anomaly L22+00E/3+00S Fill-In, Figure 3.1	1" = 50'
5.	Soil Anomaly L6+00E/2+00S, Fill-In, Figure 3.2	1" = 50'

MAPS, ETC., ROLLED AND FILED IN DRAFTING DEPARTMENT
FROM THE FOLLOWING REPORTS
WHICH ARE FILED IN SWED DISTRICT FILES

Item	6. Soil Anomaly L6+00E/9+00S, Fill-In, Figure 3.3	1" = 50'
	7. Soil Anomaly L6+00W/7+00S, Fill-In, Figure 3.4	1" = 50'
	8. Soil Anomaly L15+50W/16+00S, Fill-In, Figure 3.5	1" = 50'
	9. Soil Anomaly L50+00W/48+00S, Fill-In, Figure 3.6	1" = 50'
	10. Soil Anomaly L70+00W/8+00S and L74+00W/9+00S, Fill-In, Figure 3.7	1" = 50'
	11. No. 2 Zone Drill Hole Plan, Figure 4.0	1" = 200'
	12. No. 2 Zone Plan and Section GB 91-18, Figure 4.1	1" = 40'
	13. No. 2 Zone Plan and Section GB 91-19, Figure 4.2	1" = 40'
	14. No. 2 Zone Plan and Section GB 91-20, Figure 4.3	1" = 40'
	15. No. 2 Zone Plan and Section GB 91-21, Figure 4.4	1" = 40'
	16. West Fault Zone, Drill Hole Plan, Figure 4.5	1" = 200'
	17. West Fault Zone, Plan/Section GB 91-22, Figure 4.6	1" = 40'
	18. West Fault Zone, Plan/Section GB 91-24, Figure 4.7	1" = 40'
	19. West Fault Zone Plan/Section GB 91-24a, Figure 4.8	1" = 40'
	20. Cyclopic Project, Topographic Map	1" = 400'
	21. Cyclopic Project, Topographic Map overlay on Orthophoto map	1" = 400'
Book:	14.0 Appendices (1.2" thick)	
	14.1 Consolidated Rhodes RC Drilling, Significant Results	
	14.2 Toltec RC Drilling, Significant Results	
	14.3 Consolidated Rhodes Geochemical Analyses	
	14.3.1 Soil Samples - Gold, including fill-in	
	14.3.2 Soil Samples - ICP	
	14.3.3 Rock Chips - Gold	
	14.3.4 Rock Chips - ICP	
	14.3.5 Trenches, Fry Mine Area - Gold	
	14.3.6 Trenches, Fry Mine Area - ICP	
	14.3.7 Detailed Rock-Chip Sampling - Gold	
	14.3.8 Detailed Rock-Chip Sampling - ICP	
	14.3.9 Reverse-Circulation Drill Samples - Gold	
	14.3.10 Reverse-Circulation Drill Samples ICP	
	14.4 Consolidated Rhodes Reverse-Circulation Drill Logs.	

September 9, 1991

W.L. Kurtz

Gold Basin Drill
Intercepts/Grade
Mohave County, AZ

The seventy holes drilled by US Borax, Toltec Resources and Consolidated Rhodes have been reviewed and tabulated.

All the holes were drilled by reverse-circulation means and some were inclined (hole length thickness is recorded in the tabulation and may not represent true thickness). As the holes were plotted on various maps at various scales, I am now plotting them at a single 1" = 400' scale for detail relationships (to be submitted at a later date).

Table 1 lists the 22 holes which have 50 feet of 0.010 opt gold or better. Although it is only indicative, the 22 holes average 118 feet of 0.031 opt gold.

This thickness/grade under shallow cover has target values for SWED exploration.

Table 2 lists all the holes drilled and their thickness/grade along with supplemental notes on higher grade intervals which are included in the total thickness/grade.

JDS:mek
Att.


James D. Sell

Table 1. Gold Basin Drill Holes with 50' of 0.010 opt Au or Better

<u>Hole No.</u>	<u>Thickness</u>	<u>Grade in opt Au</u>
GB-5*	80✓	0.010✓
GB-7	185✓	0.017✓
T-1**	70✓	0.013✓
T-4	50✓	0.010✓
T-5	240✓	0.019✓
T-6	160✓	0.013✓
T-11	55✓	0.447✓
T-15	125✓	0.046✓
T-19	125✓	0.026✓
T-20	210✓	0.012✓
T-22	75✓	0.015✓
T-23	170✓	0.033✓
T-26	140✓	0.011✓
T-27	140✓	0.016✓
T-28	120✓	0.011✓
GB-1***	60✓	0.039✓
GB-4	110✓	0.042✓
GB-8	95✓	0.012✓
GB-9	110✓	0.020✓
GB-11	115✓	0.014✓
GB-18	50✓	0.044✓
GB-19	115✓	0.056✓

* US Borax Series

** Toltec Resources Series

*** Consolidated Rhodes Series

Tabulations - Gold Basin Drill Holes.

A. By Increasing Grade

Grade	Hole No.	Thickness
0.010	T-4	50
0.010	GB-5	80
0.011	T-28	120
0.011	T-26	140
0.012	GB-8	95
0.012	T-20	210
0.013	T-1	70
0.013	T-6	160
0.014	GB-11	115
0.015	T-22	75
0.016	T-27	140
0.017	GB-7	185
0.019	T-5	240
0.020	GB-9	110
0.026	T-19	125
0.033	T-23	170
0.039	GB-1	60
0.042	GB-4	110
0.044	GB-18	50
0.046	T-15	125
0.056	GB-19	115
0.447	T-11	55
opt Gold		feet

B. By Increasing Thickness

Thickness	Hole No.	Grade
50	T-4	0.010
50	GB-18	0.044
55	T-11	0.447
60	GB-1	0.039
70	T-1	0.013
75	T-22	0.015
80	GB-5	0.010
95	GB-8	0.012
110	GB-9	0.020
110	GB-4	0.042
115	GB-11	0.014
115	GB-19	0.056
120	T-28	0.011
125	T-19	0.026
125	T-15	0.046
140	T-26	0.011
140	T-27	0.016
160	T-6	0.013
170	T-23	0.033
185	GB-7	0.017
210	T-20	0.012
240	T-5	0.019
		opt Gold

Table 2. Gold Basin Intercepts*

*Holes with substantial thickness/grade values listed in Table 1.

<u>Hole No.</u>	<u>From-To</u>	<u>Thickness feet</u>	<u>opt Au</u>
<u>U.S. Borax</u>			
GB-1	210-220	10	0.003
GB-2	110-170	60	0.004
GB-3	110-115	5	0.003
GB-4	None	-	-
GB-5*	80-160	80	0.010, includes 110-130'=20' of 0.025
GB-6	None	-	-
GB-7*	0-185	185	0.017, includes 0-5=5' of 0.047 60-75=15' of 0.104 130-150=20' of 0.035
GB-8	None	-	-
GB-9	160-175	15	0.003
GB-10	85-90	5	0.003
GB-11	145-150	5	0.068
GB-12	175-230	55	0.005, includes 185-195=10' of 0.011
GB-13	110-115	5	0.029
GB-14	150-155	5	0.003
GB-15	None	-	-
GB-16	55-80	25	0.012, includes 65-70=5' of 0.026
<u>Toltec</u>			
T-1*	90-160	70	0.013, includes 90-110=20' of 0.028
T-2	150-190	40	0.018, includes 150-160=10' of 0.051
T-3	100-220	120	0.008
T-4*	120-170	50	0.010
T-5*	0-240	240	0.019, includes 0-30=30' of 0.034 70-110=40' of 0.022 150-170=20' of 0.022 200-240=40' of 0.041
T-6*	10-170	160	0.013, includes 50-60=10' of 0.032 110-120=10' of 0.056 160-170=10' of 0.030
T-7	50-80	30	0.017

Table 2. Gold Basin Intercepts*

*Holes with substantial thickness/grade values listed in Table 1.

<u>Hole No.</u>	<u>From-To</u>	<u>Thickness feet</u>	<u>opt Au</u>
T-8	90-130	40	0.011
T-9	None	-	-
T-10	10-50	40	0.012
T-11*	340-395	55	0.477
T-12	5-30	25	0.010
T-13	180-295	115	0.009, includes 260-275=15' of 0.034
T-14	0-60	60	0.006
T-15*	0-125	125	0.046, includes 0-20=20' of 0.038 65-100=35' of 0.048 115-125=10' of 0.195
T-16	0-25	25	0.022
T-17	0-20	20	0.016
T-18	0-20	20	0.013
T-19*	0-125	125	0.026, includes 5-45=40' of 0.037
T-20*	0-210	210	0.012, includes 0-40=40' of 0.021 185-210=25' of 0.030
T-21	105-130	25	0.020
T-22*	0-75	75	0.015, includes 35-75=40' of 0.027
T-23*	0-170	170	0.033
T-24	0-20	20	0.009
T-25	285-290	5	0.045
T-26*	65-205	140	0.011, includes 70-105=35' of 0.029 195-205=10' of 0.030
T-27*	65-205	140	0.016, includes 70-105=35' of 0.031 185-205=20' of 0.047
T-28*	120-240	120	0.011, includes 120-130=10' of 0.044 230-240=10' of 0.051
T-29	75-95	20	0.129

Table 2. Gold Basin Intercepts*

*Holes with substantial thickness/grade values listed in Table 1.

<u>Hole No.</u>	<u>From-To</u>	<u>Thickness feet</u>	<u>opt Au</u>
<u>Consolidated Rhodes</u>			
GB-1*	55-115	60	0.039
GB-2	35-70	35	0.039
GB-3	110-135	25	0.052
GB-4*	45-155	110	0.042
GB-5	85-125	40	0.012
GB-6	10-25	15	0.017
GB-7	None	-	-
GB-8*	35-130	95	0.012
GB-9*	25-135	110	0.020, includes 35-50=20' of 0.031 100-110=10' of 0.065
GB-10	15-25	10	0.027
GB-10	195-230	35	0.012
GB-11*	40-155	115	0.014, includes 50-80=30' of 0.018 115-145=30' of 0.020
GB-12	165-185	20	0.029
GB-12	215-230	15	0.027
GB-13	205-215	10	0.017
GB-14	20-25	5	0.012
GB-14	150-155	5	0.013
GB-14	175-180	5	0.017
GB-15	105-110	5	0.023
GB-16	15-30	15	0.020
GB-17	85-105	20	0.011
GB-18*	235-285	50	0.044, includes 240-260=20' of 0.082
GB-19*	300-415	115	0.056
GB-20	450-455	5	0.011
GB-21	210-215	5	0.007
GB-22	200-205	5	0.006
GB-23	None	-	-
GB-24	None	-	-
GB-24A	None	-	-

ASARCO

JDS
Southwestern Exploration Division

December 3, 1991

FILE NOTE

Reynolds Metals Expl. Co.
Aeromag-Resistivity Data
Surface Sampling Area Data
Cyclopic Mine Area
Mohave County, Arizona

Dick Ahern passed on the following data from Reynolds Metal Exploration Company.

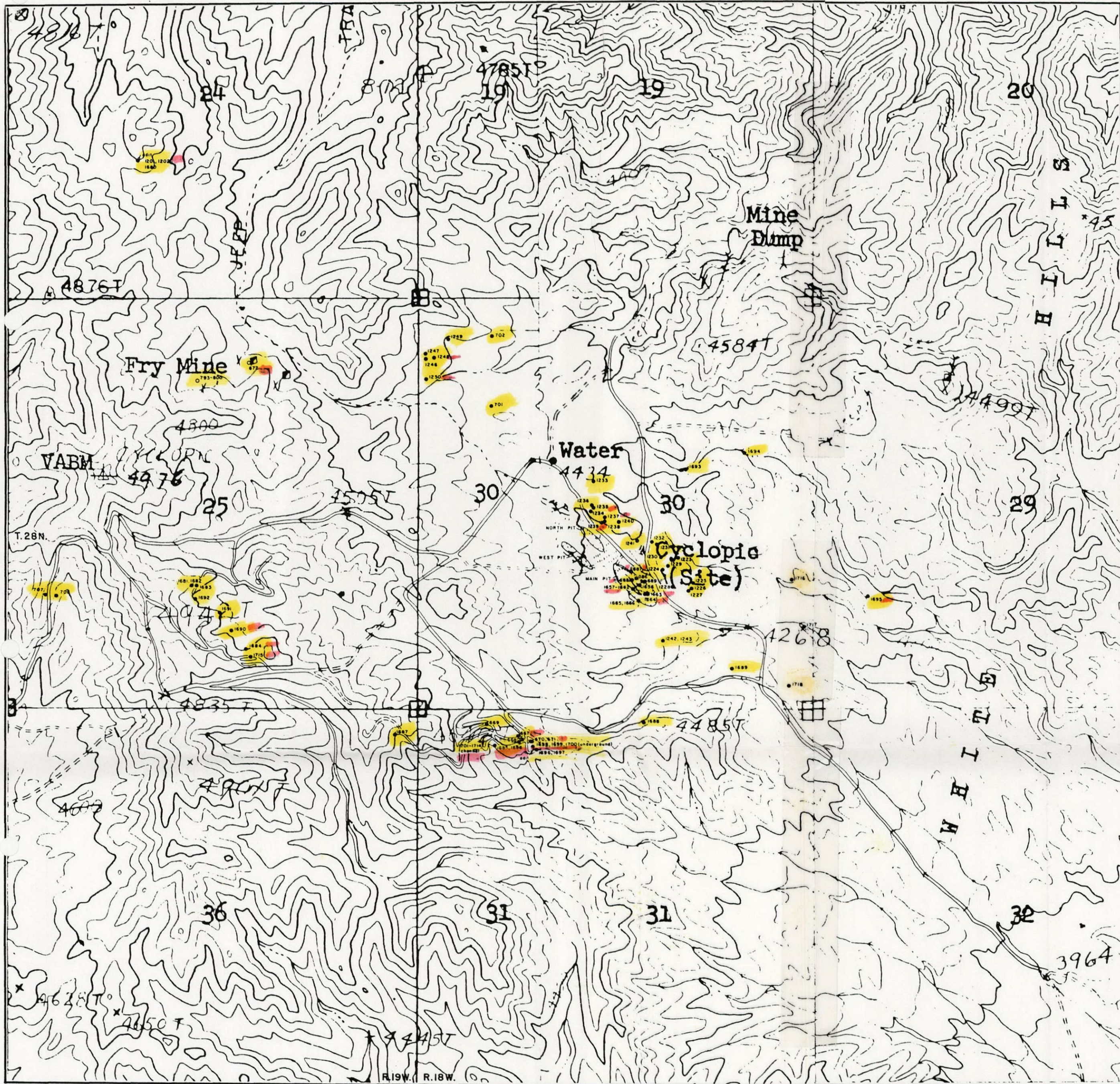
1. Total Field Magnetic Survey. Cyclopic and Lee Properties. Scale 1:6,000 Color coded with contours. Lines 10,200 W to 16,000 E; 6300 S to 5800 N.
2. VLF Survey. Cyclopic and Lee Properties. Scale 1:6,000. Lines 10,200 W to 16,000 E; 6300 S to 5800 N.
3. Magnetometer Contour Map. Scale 1:7,200. Contour interval 50 gamma. Lines 10,200 W to 2,600 E; 6300 S to 5800 N.
4. Frase Filter VLF Map. Scale 1:7,200. Contour interval 10. Lines 10,200 W to 2,600 E; 6300 S to 5800 N.
5. Sample map. Cyclopic-Lee areas. 105 samples with 31 having 1 ppm Au or better.

Items 1 thru 4 are filed in the Drafting Department Gold Basin file drawer.

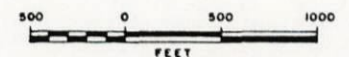
JDS:mek

James D. Sell
James D. Sell

cc: W.L. Kurtz



1 ppm or better



REYNOLDS METALS EXPLORATION, INC.
5301 Longley Lane - Suite 117 • Reno, Nevada 89511
A Consolidated Subsidiary - Reynolds Metals Co.

T. 28N., R. 18 & 19W.
CYCLOPIC MINE AREA
MOHAVE COUNTY, ARIZONA

SAMPLE LOCATION MAP

AUTHOR: BRW	DRAWN BY: BW	DATE: 8/8/81	SCALE:
REVISIONS:	DRAWING NO.:		



Chemex Labs Inc.

Analytical Chemists * Geochemists * Registered Assayers
994 West Glendale Ave., Suite 7, Sparks,
Nevada, U.S.A. 89431
PHONE: 702-356-5395

To: REYNOLDS METALS EXPLORATION INC.

5301 LONGLEY LANE, STE. 157
RENO, NEVADA
89511

Page number 1

Certificate Date: 29-JUL-91
Invoice No. : 19118483
P.O. Number :

Project : CYCLOPIC
Comments: ATTN: RAY IRWIN CC: DR. DOUGLAS JINKS

CERTIFICATE OF ANALYSIS

A9118483

SAMPLE DESCRIPTION	PREP CODE	Au ppb FA+AA										
1681	205 294	940										
1682	205 294	375										
1683	205 294	740										
1684	205 294	3130										
1685	205 294	7550										
1686	205 294	5210										
1687	205 294	540										
1688	205 294	10										
1689	205 294	40										
1690	205 294	2360										
1691	205 294	40										
1692	205 294	765										
1693	205 294	5										
1694	205 294	70										
1695	205 294	>10000										
1696	205 294	60										
1697	205 294	90										
1698	205 294	4990										
1699	205 294	>10000										
1700	205 294	4210										
1701	205 294	1000										
1702	205 294	230										
1703	205 294	310										
1704	205 294	1520										
1705	205 294	1870										
1706	205 294	660										
1707	205 294	70										
1708	205 294	480										
1709	205 294	1380										
1710	205 294	605										
1711	205 294	310										
1712	205 294	90										
1713	205 294	15										
1714	205 294	40										
1715	205 294	2540										
1716	205 294	< 5										
1717	205 294	< 5										
1718	205 294	10										

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See Next sheet
for cert/ten necessary

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Chemex Labs Inc.

Analytical Chemists • Geochemists • Registered Assayers
994 West Glendale Ave., Suite 7, Sparks,
Nevada, U.S.A. 89431
PHONE: 702-356-5395

To: REYNOLDS METALS EXPLORATION INC.

5301 LONGLEY LANE, STE. 157
RENO, NEVADA
89511.

Page Number : 1
Total Pages : 1
Certificate Date: 30-JUL-91
Invoice No. : 19118811
P.O. Number :

Project : CYCLOPTIC

Comments: ATTN: RAY IRWIN CC: DR. DOUGLAS JINKS ORIG. ON A9118483

CERTIFICATE OF ANALYSIS.

A9118811

[illegible]

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Project : CYCLOPTIC
Comments: ATTN: RAY IRWIN

Page Number : 1
Total : 2
Certificate Date: 14-JUN-91
Invoice No. : 19116156
P.O. Number :

CERTIFICATE OF ANALYSIS

A9116156

SAMPLE DESCRIPTION	PREP CODE		Au ppb FA+AA									
1223	294	205	45									
1224	294	205	15									
1225	294	205	15									
1226	294	205	10									
1227	294	205	20									
1228	294	205	10									
1229	294	205	10									
1230	294	205	10									
1231	294	205	5									
1232	294	205	10									
1233	294	205	5									
1234	294	205	5									
1235	294	205	8560									
1236	294	205	75									
1237	294	205	1780									
1238	294	205	55									
1239	294	205	2790									
1240	294	205	45									
1241	294	205	5									
1242	294	205	< 5									
1243	294	205	< 5									
1246	294	205	< 5									

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Project : CYCLOPTIC
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Page Number : 2
Total Pages : 2
Certificate Date: 14-JUN-91
Invoice No. : 19116156
P.O. Number :

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SAMPLE DESCRIPTION	PREP CODE	Au ppb FA+AA										
1247	294	205	360									
1248	294	205	>10000									
1249	294	205	40									
1250	294	205	2090									
1656	294	205	330									
1657	294	205	15									
1658	294	205	>10000									
1659	294	205	770									
1660	294	205	425									
1661	294	205	910									
1662	294	205	285									
1663	294	205	4690									
1664	294	205	2770									
1665	294	205	35									
1680	294	205	20									

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Project : ARIZONA RECON
Comments: ATTN: RAY IRWIN

Page Number : 2
Total Pages : 2
Certificate Date: 23-MAY-91
Invoice No. : 19115186
P.O. Number :

CERTIFICATE OF ANALYSIS

A9115186

SAMPLE DESCRIPTION	PREP CODE		Au ppb FA+AA									
0800	205	294	105									
1201	205	294	2460									
1202	205	294	1520									
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Project : ARIZONA RECON
Comments: ATTN: RAY IRWIN CC: DR. DOUGLAS JINKS

Page Number : 1
Total Pages : 2
Certificate Date: 25-APR-91
Invoice No. : 19113734
P.O. Number :

CERTIFICATE OF ANALYSIS

A9113734

SAMPLE DESCRIPTION	PREP CODE		Au ppb FA+AA	Ag ppm Aqua R	As ppm	Cu ppm	Mo ppm	Pb ppm	Sb ppm	Zn ppm		
667 Cycloptic mine area	205	294	1100	5.5	6	>10000	5	26	4.6	2100		
668	205	294	>10000	8.4	20	320	30	1350	6.4	16		
669	205	294	490	0.2	1	30	6	18	2.2	28		
670	205	294	1810	0.7	1	15	6	32	1.4	8		
671	205	294	1160	0.7	2	14	10	16	1.4	9		
672	205	294	6100	2.8	9	90	4	780	6.4	320		
686	205	294	590	2.0	7	39	4	420	12.8	112		
687	205	294	8820	9.0	86	360	26	>10000	86.0	520		
688	205	294	>10000	11.5	50	97	13	>10000	65.0	162		
689	205	294	1450	1.4	7	116	15	970	3.0	60		
690	205	294	475	-----	-----	-----	-----	-----	-----	-----		

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Page Number : 1
Total Pages : 1
Certificate Date: 22-APR-91
Invoice No. : 19113973
P.O. Number :

Project : ARIZONA RECON - CYCLOPIC
Comments: ATTN: RAY IRWIN CC: DR. DOUGLAS JINKS ORIG. ON A9113734

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A9113973

SAMPLE DESCRIPTION	PREP CODE	Au FA oz/T									
667 668 670	214 --	0.036									
	214 --	1.696									
	214 --	0.057									
671 672	214 --	0.034									
	214 --	0.166									
	214 --	0.042									
	214 --	0.109									
	214 --	0.467									
	214 --	0.542									
	214 --	0.578									
687 688 689	214 --	0.297									
	214 --	0.803									
	214 --	0.040									

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Project : ARIZONA RECON
Comments: ATTN: RAY IRWIN CC: DR. DOUGLAS JINKS

Page Number : 2
Total Pages : 2
Certificate Date: 25-APR-91
Invoice No. : 19113734
P.O. Number :

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A9113734

SAMPLE DESCRIPTION	PREP CODE	Au ppb FA+AA	Ag ppm Aqua R	As ppm	Cu ppm	Mo ppm	Pb ppm	Sb ppm	Zn ppm		
691	205 294	100	-----	-----	-----	-----	-----	-----	-----		
692	205 294	40	-----	-----	-----	-----	-----	-----	-----		
693	205 294	15	-----	-----	-----	-----	-----	-----	-----		
694	205 294	35	-----	-----	-----	-----	-----	-----	-----		
695	205 294	75	-----	-----	-----	-----	-----	-----	-----		
701	205 294	10	< 0.2	2	12	2	8	0.4	72		
702	205 294	10	0.8	140	96	15	270	16.4	300		
707	205 294	< 5	< 0.2	5	3	4	29	0.4	26		
708	205 294	< 5	< 0.2	1	2	1	19	0.2	22		

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Page Number :1
Total Pages :2
Certificate Date: 22-APR-91
Invoice No. :19113734
P.O. Number :

Project : ARIZONA RECON - *CYCLOPIC*
Comments: ATTN: RAY IRWIN CC: DR. DOUGLAS JINKS

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A9113734

SAMPLE DESCRIPTION	PREP CODE	Au ppb FA+AA	Ag ppm Aqua R	As ppm	Cu ppm	Mo ppm	Pb ppm	Sb ppm	Zn ppm		
<i>opic</i> 667 668 669 670	205 205 205 205	294 294 294 294	1100 >10000 490 1810	delay delay delay delay	delay delay delay delay	delay delay delay delay	delay delay delay delay	delay delay delay delay	delay delay delay delay		
671 672	205 205	294 294	1160 6100	delay delay	delay delay	delay delay	delay delay	delay delay	delay delay		
	205 205 205 205 205	294 294 294 294 294	1440 3730 235 235 145	delay delay delay delay delay	delay delay delay delay delay	delay delay delay delay delay	delay delay delay delay delay	delay delay delay delay delay	delay delay delay delay delay		
<i>opic</i> 686 687 688 689 690	205 205 205 205 205	294 294 294 294 294	590 8820 >10000 1450 475	delay delay delay delay -----	delay delay delay delay -----	delay delay delay delay -----	delay delay delay delay -----	delay delay delay delay -----	delay delay delay delay -----		

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Page Number : 2
Total Pages : 2
Certificate Date: 22-APR-91
Invoice No. : 19113734
P.O. Number :

Project : ARIZONA RECON - CYCLOPIC
Comments: ATTN: RAY IRWIN CC: DR. DOUGLAS JINKS

CERTIFICATE OF ANALYSIS

A9113734

SAMPLE DESCRIPTION	PREP CODE	Au ppb FA+AA	Ag ppm Aqua R	As ppm	Cu ppm	Mo ppm	Pb ppm	Sb ppm	Zn ppm		
691	205	294	100	-----	-----	-----	-----	-----	-----		
692	205	294	40	-----	-----	-----	-----	-----	-----		
693	205	294	15	-----	-----	-----	-----	-----	-----		
694	205	294	35	-----	-----	-----	-----	-----	-----		
695	205	294	75	-----	-----	-----	-----	-----	-----		
<i>cyclopic</i> 701	205	294	10	delay	delay	delay	delay	delay	delay		
702	205	294	10	delay	delay	delay	delay	delay	delay		
707	205	294	< 5	delay	delay	delay	delay	delay	delay		
708	205	294	< 5	delay	delay	delay	delay	delay	delay		

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CERTIFICATION: *W. J. Jinks*

Project GB Geologist Irwin
 State _____ County _____
 Sec. _____ T. _____ R. _____ Date 7/15/91
 Location Underground - Red Cloud shaft/adit
 Chip _____ Channel _____ Grab Grab
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____
 Remarks at face 585W trend on drift
all sheared + 6x gr. quartz 50-75' from
limestone dike at head of Red Cloud
in upper fault dips to east shaft
N20W high & cuts across drift
at face may offset qtz 6x vein zone.
 Assay for: ✓
 Au Ag Cu Mo Pb Zn Hg As Sb

Project GB Geologist Irwin
 State _____ County _____
 Sec. _____ T. _____ R. _____ Date 7/15
 Location Underground Red Cloud shaft
 Chip Chip Channel _____ Grab _____
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____
 Remarks in back near face of drift
qtz 6x clot w/ lim/hem. & sheared
6x around edge w/ qtz frags
 Assay for: ✓
 Au Ag Cu Mo Pb Zn Hg As Sb

1699

Reynolds Metals Exploration, Inc.

Project GB Geologist Winston
 State _____ County _____
 Sec. _____ T. _____ R. _____ Date 7/15/91
 Location Underground/Red Cloud adit 100' in
 Chip _____ Channel _____ Grab _____
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. w/ qtz frags
 Remarks hematitic 6x, in adit next
to shaft... shear zone N65W dips
into main (Red Cloud) structure which
is almost E-W dipping S.
65-70°
 Assay for: ✓
 Au Ag Cu Mo Pb Zn Hg As Sb

1700

Reynolds Metals Exploration, Inc.

Project Recon Geologist Irwin/Winston
 State AZ County Mohave
 Sec. 30 T. 28N R. 18W Date 4/10/91
 Location Cycloptic mine
 Chip _____ Channel _____ Grab Grab flint
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____
 Remarks top of small red hill due north
of working 1/2 mile or so.
6x-sheared red granite - appears to be
HW of detachment zone
hematite/limonite & qtz on microfractures
minor fine gr. & rock - altered amphibolite
and schist
 Assay for: ✓
 Au Ag Cu Mo Pb Zn Hg As Sb

0701

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Project Cyclopic Geologist Winston
 State _____ County _____
 Sec. _____ T. _____ R. _____ Date 7/14/91
 Location Circular in amoyon 580 E ~ 250' from 23N 4W
 Chip _____ Channel _____ Grab _____
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____
 Remarks brecciated monzogranite - Lt tan w/ ed/bn streaks along joints N30E N10E & 6x frags of diorite - may trend N40W
 Assay for: Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project Cyclopic Geologist Winston
 State _____ County _____
 Sec. _____ T. _____ R. _____ Date 7/14/91
 Location prospect AA claims 28+25
 Chip _____ Channel _____ Grab dump
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____
 Remarks gneissic terrane w/ amphibolite & alaskite lenses - prospect on hem. stained gtz vein N80E dip 50-60° N
 Assay for: Au Ag Cu Mo Pb Zn Hg As Sb

1695

Reynolds Metals Exploration, Inc.

Project GB Cyclopic Geologist Irwin
 State _____ County _____
 Sec. _____ T. _____ R. _____ Date 7/15/91
 Location Adit down hill FROM RED HILL SHAFT
 Chip 3' Channel _____ Grab _____
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____
 Remarks COARSE GRANITE gneiss breccia IRKING @ N65°W dipping 35°SW. Crumbly breccia NOT cemented looks TECTONIC. FRAGS
vein gtz up to 1" wide SCATTERED RANDOMLY AT VARIOUS ORIENTATIONS AND CONCENTRATIONS WITHIN BRECCIA
FeOx minor but most intense NEAR FOOTWALL (hematitic). H.W. & F. granitic gneiss cut by deformed metamorphic gtz veins
 Assay for: Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project GB Geologist Winston
 State _____ County _____
 Sec. _____ T. _____ R. _____ Date 7/15/91
 Location AT 1696
 Chip Select Channel MTA Grab _____
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____
 Remarks SELECT FRAGMENTS OF GTZ VEIN FRAGMENTS WITHIN BRECCIA
bull white/gray gtz
 Assay for: Au Ag Cu Mo Pb Zn Hg As Sb

1697

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Project GB Geologist Winston
 State _____ County _____
 Sec. _____ T. _____ R. _____ Date 7/11/91
 Location Trench N60W 100' from 2500S
 Chip Channel 3' vertical Grab 4000W
 Select FW Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____
 Remarks sheared granite - monzo granite w/ hem.
small qtz stringers - lines - looks good
N65W 40-45° SW some hematite 1/4" stringers
dip 65° SW
NW of Red cloud on same structure
most drill holes uphill of this trench
iz. wrong side considering visible dip
 Assay for: ✓
 Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project GB Geologist Winston
 State _____ County _____
 Sec. 31 T. 28N R. 18W Date 7/11/91
 Location at 2 1000E 1100S NW slope of
hill
 Chip Channel Grab
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____
 Remarks easterly projection of Red cloud structure
likely, sheared monzo granite w/ limonite
and minor hematite
north
old prospect - on side of hill
 Assay for: ✓
 Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project GB Geologist _____
 State _____ County _____
 Sec. _____ T. _____ R. _____ Date 7/11
 Location Fox 3300S 1400W 2850' NW
 Chip hole Channel Grab
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____
 Remarks old drill site - road ends here
except very steep connecting trail to NW
westaly trend of Red Cloud structure
red hematite bx in road cut
 Assay for: 1687
N70E 50° SE
apparent strike - very small exposure
 Au Ag Cu Mo Pb Zn Hg As Sb ✓

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Project GB Geologist _____
 State _____ County _____
 Sec. _____ T. _____ R. _____ Date 7/11/91
 Location prospect pit N40E of road - on way out
of canyon
 Chip Channel Grab
 Select 2N 14E Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____
 Remarks N75E 40° SW dip on foliation
in schist flat shear zones also present
N70W 30° dip SW - flat shear w/ calcite
layers
 Assay for: 1689
 Au Ag Cu Mo Pb Zn Hg As Sb ✓

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Project Cyclopic Geologist _____
 State _____ County _____
 Sec. _____ T. _____ R. _____ Date _____
 Location Adjacent to 1663
 Chip 10' horz Channel _____ Grab _____
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____

Remarks hw of 1663 breccia with
OF FRAGMENTS decreasing up section
NOT AS much FeOx AS 1663

1664
 Assay for: _____
 Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project Reynolds Geologist _____
 State Cyclopic County _____
 Sec. 24 T. _____ R. _____ Date _____
 Location 300N 9000W PROSPECT P.T 1/2 mile NORTH-WEST OFF RAIL
 Chip _____ Channel _____ (Grab) P.T
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____

Remarks Reddish-gray ARGILLIZED
GRANITE-gneiss breccia

1000
 Assay for: _____
 Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project Cyclopic Geologist _____
 State _____ County _____
 Sec. _____ T. _____ R. _____ Date _____
 Location TRANCH Southeast of CYCLOPIC P.T
ON SW side 50' EAST OF 200N 00 West
 Chip 4' Vert Channel _____ Grab _____
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____

Remarks CRumbly granite gneiss breccia
APPEARS to be dipping 45° Southwestward
ONLY TRACE Limonite
VERY grungy dirty sample MAY
be contaminated with fines
FROM RUN OFF

1665
 Assay for: _____
 Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project GB claims Geologist Winston
 State AZ County Mohave
 Sec. 25 T. 28N R. 12W Date 7/10/91
 Location 300N 9000W PROSPECT P.T 1/2 mile NORTH-WEST OFF RAIL
 Chip _____ Channel _____ (Grab) P.T
 Select Fluorite pit - 92-A Sample Thickness Drill hole T-10
 Ft. 120' SE of 3500S 4600W Vert. _____ Horiz. _____

Remarks Reddish-gray ARGILLIZED
granite gneiss breccia
sph of red (hematite) gouge in pit
Fault surface N70W dip 70° SW
near vertical slides

1681
 Assay for: _____
 Au Ag Cu Mo Pb Zn Hg As Sb

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Project Cyclopic Geologist _____
 State _____ County _____
 Sec. _____ T. _____ R. _____ Date _____
 Location ADJACENT NORTH TRADING NEAR 400 W LIND
300N 300W
 Chip 5' HORZ Channel Grab
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____
 Remarks MOTTLED RED & GRAY CLAYEY
brecciated
sheared zone supposedly northernmost
STRUCTURE IN P.T.

Assay for: _____
 Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project Cyclopic Geologist _____
 State _____ County _____
 Sec. _____ T. _____ R. _____ Date _____
 Location ADJACENT TO AND SOUTH OF 1657
 Chip 4' HORZ Channel Grab
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____
 Remarks CLAYEY MATRIX breccia FRAGS
range from small pebbles to 2 1/2" diam
MATRIX limonite stained FRAGS
CONSIST OF QTZ breccia AND GRANITE
GNEISS

Assay for: _____
 Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project Cyclopic Geologist _____
 State _____ County _____
 Sec. _____ T. _____ R. _____ Date _____
 Location _____
 Chip 5 1/2' HORZ Channel Grab
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____
 Remarks h.w. STRONGLY sheared
GRANITE gneiss only minor
limonite

Assay for: _____
 Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project Cyclopic Geologist _____
 State _____ County _____
 Sec. _____ T. _____ R. _____ Date _____
 Location ADJACENT TO AND SOUTH OF 1658
 Chip 5' HORZ Channel Grab
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____
 Remarks limonitic & hematite stained
clay matrix breccia minor
qtz breccia frags mainly granite
gneiss frags

Assay for: _____
 Au Ag Cu Mo Pb Zn Hg As Sb

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 ASSAY(S) AND / OR OTHER DOCUMENT(S).

Reynolds Metals Exploration, Inc.

Project <u>cyclopic</u>		Geologist	
State		County	
Sec.	T.	R.	Date
Location <u>PROSPECT P: T</u> <u>LOC IN APPX 650 S 500 W</u>			
Chip	Channel	(Grab) <u>Dump</u>	
Select	Sample Thickness		
Ft.	Vert.	Horiz.	
Remarks <u>LimONITic QUARTZ BRECCIA</u> <u>DOORLY EXPOSED APPEARS TO BE STEADILY</u> <u>IPPING CUTTING UNALT E.g.</u> <u>MONZONIC GRANITE</u>			
Assay for: <u>5 ppb</u> ✓			
Au	Ag	Cu	Mo
Pb	Zn	Hg	As
Sb			

Reynolds Metals Exploration, Inc.

Project <u>cyclopic</u>		Geologist	
State		County	
Sec.	T.	R.	Date
Location <u>PROSPECT P: T AT SOUTH END OF TAILINGS</u>			
Chip	Channel	(Grab)	
Select	Sample Thickness		
Ft.	Vert.	Horiz.	
Remarks <u>VARIOUS PIECES OF LimONITic</u> <u>BEARING OR FeCO₃ BEARING Qtz VEINS</u> <u>AND INTENSELY SHEARED GREENISH</u> <u>GRAY GRANITE GNEISS CUT BY Hematite</u> <u>AND LimONITic FRACTURES SUBPARALLEL</u> <u>TO SOLUTION AND MICRO Qtz UNITS</u> <u>1242</u> <u>NSOE & N10-40W STRUCTURAL</u> <u>INTERSECTION IN P: T</u>			
Assay for: <u>5 ppb</u> ✓			
Au	Ag	Cu	Mo
Pb	Zn	Hg	As
Sb			

Reynolds Metals Exploration, Inc.

Project <u>cyclopic</u>		Geologist	
State		County	
Sec.	T.	R.	Date
Location <u>SAME AS 1242</u>			
Chip	Channel	(Grab)	
Select	Sample Thickness		
Ft.	Vert.	Horiz.	
Remarks <u>INTENSELY SHEARED SILICIFIED</u> <u>GREENISH RED GRANITE GNEISS</u> <u>WITH Qtz UNITS AND SOLDS OF</u> <u>limONITic</u>			
Assay for: <u>5</u> ✓			
Au	Ag	Cu	Mo
Pb	Zn	Hg	As
Sb			

Reynolds Metals Exploration, Inc.

Project <u>cyclopic</u>		Geologist	
State		County	
Sec.	T.	R.	Date
Location <u>PROSPECT P: T HILLSIDE NW OF cyclopic</u>			
Chip	Channel	Grab	
Select	Sample Thickness		
Ft.	Vert.	Horiz.	
Remarks <u>MILDLY WEATHERED, highly sheared</u> <u>AND broken coarse grained biotite</u> <u>granite minor LimONITic ALONG</u> <u>FRACTURES</u> <u>STRUCTURES appear to STRIKE NSOE</u> <u>1246</u>			
Assay for: ✓ ✓			
Au	Ag	Cu	Mo
Pb	Zn	Hg	As
Sb			

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Project <u>Cyclopic</u>		Geologist	
State		County	
Sec.	T.	R.	Date
Location <u>PROSPECT PIT 50' WEST OF 900N 1400W</u>			
Chip	Channel		<u>(Grab) dump</u>
Select	Sample Thickness		
Ft.	Vert.	Horiz.	
Remarks <u>Sheared greenish gray granite gneiss cut by limonite and/or FeCO₃ veinlets</u>			
Assay for:			
Au	Ag	Cu	Mo
Pb	Zn	Hg	As
Sb			

Reynolds Metals Exploration, Inc.

Project <u>Cyclopic</u>		Geologist	
State		County	
Sec.	T.	R.	Date
Location <u>TOP OF Hill 50' North of 600 12000</u>			
Chip	Channel		<u>(Grab)</u>
Select	Sample Thickness		
Ft.	Vert.	Horiz.	
Remarks <u>Bleached (?) & greenish gray granite gneiss cut by Qtz-Limonite or FeCO₃ veinlets</u>			
Reddish gray granite gneiss cut by Qtz veinlets, Pyrite molds. Rock hematitic after pyrite looks good!!			
Assay for:			
Au	Ag	Cu	Mo
Pb	Zn	Hg	As
Sb			

339 opt

Project <u>Cyclopic</u>		Geologist	
State		County	
Sec.	T.	R.	Date
Location <u>PROSPECT PIT 50' WEST OF 900N 1400W</u>			
Chip	Channel		<u>(Grab) dump</u>
Select	Sample Thickness		
Ft.	Vert.	Horiz.	
Remarks <u>Sheared greenish gray granite gneiss cut by limonite and/or FeCO₃ veinlets bleached (?)</u>			
Sheared & greenish gray granite gneiss cut by Qtz veinlets and Qtz limonite of FeCO ₃ veinlets.			
Assay for:			
Au	Ag	Cu	Mo
Pb	Zn	Hg	As
Sb			

1234

Reynolds Metals Exploration, Inc.

Project <u>Cyclopic</u>		Geologist	
State		County	
Sec.	T.	R.	Date
Location <u>10' NORTH OF 600N 12000W</u>			
Chip	Channel		<u>(Grab)</u>
Select	Sample Thickness		
Ft.	Vert.	Horiz.	
Remarks <u>LT greenish gray granite gneiss cut by Qtz-Limonite or Qtz-FeCO₃ veinlets locally a stockwork similar to 1235 but not as gossanous</u>			
Assay for:			
Au	Ag	Cu	Mo
Pb	Zn	Hg	As
Sb			

1236

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ASSAY(S), AND / OR OTHER DOCUMENT(S).

Project cyclopic Geologist _____

State _____ County _____

Sec. _____ T. _____ R. _____ Date _____

Location ON OLD TRAIL 1/2 MILE WEST 275' EAST
600N, 400E

Chip _____ Channel _____ Grab _____

Select _____ Sample Thickness _____

Ft. _____ Vert. _____ Horiz. _____

Remarks LT green sheared gneissic
granite mine limonite or FeCO₃
filled fractures, perhaps occasional
pyrite veinlet

Assay for: _____
Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project cyclopic Geologist _____

State _____ County _____

Sec. _____ T. _____ R. _____ Date _____

Location 20' WEST OF 1226 IN ROAD CUT

Chip _____ Channel _____ Grab _____

Select _____ Sample Thickness _____

Ft. _____ Vert. _____ Horiz. _____

Remarks LT gray green
gneissic granite cut
by limonite or FeCO₃ filled fractures
rock has more sericite than 1226

Assay for: _____
Au Ag Cu Mo Pb Zn Hg As Sb

State _____ County _____

Sec. _____ T. _____ R. _____ Date _____

Location ROAD CUT ON OLD TRAIL MIDPOINT BETWEEN
600N, 400E & 700N 400E

Chip _____ Channel _____ Grab _____

Select _____ Sample Thickness _____

Ft. _____ Vert. _____ Horiz. _____

Remarks LT green
gneissic granite cut by limonite
or FeCO₃ filled fractures
sheared, fractured granite gneiss
with more limonite than 1227

1226

Assay for: _____
Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project cyclopic Geologist _____

State _____ County _____

Sec. _____ T. _____ R. _____ Date _____

Location AT 500N 200E

Chip _____ Channel _____ Grab _____

Select _____ Sample Thickness _____

Ft. _____ Vert. _____ Horiz. _____

Remarks LT greenish red granite
gneiss some hematite
oxidizing Fe hematite (?)

1228

Assay for: _____
Au Ag Cu Mo Pb Zn Hg As Sb

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Project Recon Geologist Winston Irwin
 State AZ County Mohave
 Sec. T. R. R. Date 4/7
 Location SW of Cycloptic - Red Cloud
 Chip Channel Grab

Select Sample Thickness

Ft. Vert. Horiz.

Remarks Cu-stained hematitic
granite from near prospect - Red Cloud Shop
drill pad 3 holes close spaced

GB

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project Recon Geologist Winston Irwin
 State AZ County Mohave
 Sec. T. R. R. Date 4/7/91
 Location 90-RC-2 above Red Cloud Shop
 Chip Channel Grab Cutting

Select Sample Thickness

Ft. Vert. Horiz.

Remarks Toltec drill hole
west northwest trending hematite bx
zone appears steeply dipping

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

Project Recon Geologist Winston Irwin
 State AZ County Mohave
 Sec. T. R. R. Date 4/7/91
 Location SW of Cycloptic - Red Cloud
 Chip Channel Grab

Select Sample Thickness

Ft. Vert. Horiz.

Remarks near prospect pit - old drill site
gty frags in hematite rich granite

0668

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project Recon Geologist Irwin
 State AZ County Mohave
 Sec. T. R. R. Date 4/7
 Location PROSPECT PIT Toltec Claims - E of
 Chip Channel Surface TO 10' Grab Red Cloud

Select Sample Thickness

Ft. Vert. Horiz.

Remarks 0-10' sheared hematized
granite cut by Qtz veins
that also appear to be broken
is not brecciated

0670

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project Recon Geologist Irwin
 State AZ County Mohave
 Sec. T. R. R. Date 4/7
 Location AT 0670 Toltec claims
 Chip Channel 10'-15' Grab

Select Sample Thickness
 Ft. Vert. Horiz.

Remarks Same as 0670 but
perhaps more QZ veining

Assay for:
 Au Ag Cu Mo Pb Zn Hg As Sb

Met

Reynolds Metals Exploration, Inc.

Project Recon Geologist Winston
 State AZ County Mohave
 Sec. 25 T. 28N R. 19W Date 4/7/91
 Location Fry Mine - Snake Fry
 Chip Channel Grab dump

Select Sample Thickness
 Ft. Vert. Horiz.

Remarks Large snake!
Showed 6x zone weak clay allent
N10W dip east 70-50°

Assay for:
 Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project Recon Geologist Irwin/Winston
 State AZ County Mohave
 Sec. T. R. R. Date 4/8/91
 Location Cycloptic mine
 Chip Channel Grab

Select Sample Thickness
 Ft. Vert. Horiz.

Remarks Jasperoid 6x NW end of main
trenching - yellow brn. sil. matrix w/
white 6x frags. < 1"

Top part of detachment zone w/ red
& yellow clay alkali sh. below

Assay for:
 Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project Recon Geologist Irwin/Winston
 State AZ County Mohave
 Sec. T. R. R. Date 4/8/91
 Location Cycloptic mine
 Chip Channel Grab

Select Sample Thickness
 Ft. Vert. Horiz.

Remarks HW zone jasperoid

Assay for:
 Au Ag Cu Mo Pb Zn Hg As Sb

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Reynolds Metals Exploration, Inc.

Project GB claims Geologist Mike
 State AZ County Mohave
 Sec. T. R. Date 7/15/91
 Location Red cloud NW extension
 Chip (Channel) 10' h₂O₂ Grab
 Select Sample Thickness
 Ft. Vert. Horiz.
 Remarks TOITEC #1's 10026 & 10025

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project GB Geologist W. Smith
 State County
 Sec. T. R. Date 7/15
 Location
 Chip (Channel) 10' Grab
 Select Sample Thickness
 Ft. Vert. Horiz.
 Remarks SAMDIO #1 10030

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

Project GB Geologist R.I.
 State County
 Sec. T. R. Date 7/15/91
 Location SW side and adjacent to 1701
 Chip Channel 10' h₂O₂ Grab
 Select Sample Thickness
 Ft. Vert. Horiz.
 Remarks SAMP # 10027 & 10028

1702

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project GB Geologist Irwin
 State County
 Sec. T. R. Date 7/15
 Location
 Chip (Channel) 10' Grab
 Select Sample Thickness
 Ft. Vert. Horiz.
 Remarks

1704

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

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Project GB Geologist Winsten

State _____ County _____

Sec. _____ T. _____ R. _____ Date 7/15

Location _____

Chip Channel 10' Grab

Select _____ Sample Thickness _____

Ft. _____ Vert. _____ Horiz. _____

Remarks _____

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project GB Geologist Winsten

State _____ County _____

Sec. _____ T. _____ R. _____ Date 7/15

Location _____

Chip Channel 10' Grab

Select _____ Sample Thickness _____

Ft. _____ Vert. _____ Horiz. _____

Remarks _____

1706

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project GB Geologist Irwin

State _____ County _____

Sec. _____ T. _____ R. _____ Date 7/15

Location _____

Chip Channel 10' Grab

Select _____ Sample Thickness _____

Ft. _____ Vert. _____ Horiz. _____

Remarks _____

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project GB Geologist Winsten

State _____ County _____

Sec. _____ T. _____ R. _____ Date 7/15

Location _____

Chip Channel 10' Grab

Select _____ Sample Thickness _____

Ft. _____ Vert. _____ Horiz. _____

Remarks _____

1708

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

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Project GB Geologist Irwin

State _____ County _____

Sec. _____ T. _____ R. _____ Date 7/15

Location _____

Chip _____ Channel 10' Grab _____

Select _____ Sample Thickness _____

Ft. _____ Vert. _____ Horiz. _____

Remarks _____

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

Project	68		Geologist	Irwin
State			County	
Sec.	T.	R.	Date 7/15	
Location				
Chip	Channel		Grab	
Select	Sample Thickness			
Ft.	Vert.	Horiz.		
Remarks 10043-10046				

Project		6B		Geologist		Winston	
State				County			
Sec.		T.		R.		Date 7/15/90	
Location							
Chip		Channel			Grab		
Select				Sample Thickness			
Ft.		Vert.			Horiz.		
Remarks							

Assay for:

Au	Ag	Cu	Mo	Pb	Zn	Hg	As	Sb
----	----	----	----	----	----	----	----	----

Project	GB		Geologist	Winston
State			County	
Sec.	T.	R.	Date	7/15/91
Location				
Chip	Channel 10'		Grab	
Select	Sample Thickness			
Ft.	Vert.		Horiz.	
Remarks				

1712

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

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Reynolds Metals Exploration, Inc.

Project GB Geologist Irwin

State _____ County _____

Sec. _____ T. _____ R. _____ Date 7/15

Location _____

Chip Channel 10' Grab

Select _____ Sample Thickness _____

Ft. _____ Vert. _____ Horiz. _____

Remarks _____

1713

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project GB Geologist Winston

State _____ County _____

Sec. _____ T. _____ R. _____ Date 7/15

Location _____

Chip Channel 10' Grab

Select _____ Sample Thickness _____

Ft. _____ Vert. _____ Horiz. _____

Remarks Sample 10050

1714

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project GB Geologist Irwin

State _____ County Mohave

Sec. _____ T. _____ R. _____ Date 7/15/91

Location 50' NW 37005 3400W WRAK
T-11 SE of Ca E pit

Chip Channel 10' Grab

Select _____ Sample Thickness _____

Ft. _____ Vert. _____ Horiz. _____

Remarks red hematite bx zone in road cut
elw N40W of T-11 -

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project Cyclopic Geologist Winston/Irwin

State _____ County _____

Sec. _____ T. _____ R. _____ Date 7/17/91

Location N60E of 15N 14E in anomaly

Chip _____ Channel _____ Grab _____

Select _____ Sample Thickness _____

Ft. _____ Vert. _____ Horiz. _____

Remarks leucogneiss - near NS05 mag
anomaly - not impressive, some FeOx
along cracks - mainly white feldspar rhyolite
has geophysical anomaly + geologic contact
zone of mingled granite

1716

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

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Reynolds Metals Exploration, Inc.

Project Cyclopic Geologist Irwin/Winska
 State _____ County Mohave
 Sec. _____ T. _____ R. _____ Date 7/17/91
 Location prospect pit 30' edge of area in arroyo SE of truck near 16E
 Chip _____ Channel Grab dump
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____
 Remarks contact of leucogneiss and tan-vd brn mafic in gneiss/schist terraine - some FeOx - lim on cracks & pseudo brn - not a good looking cont.

Assay for:
 Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project Cyclopic Geologist Irwin
 State _____ County _____
 Sec. _____ T. _____ R. _____ Date 7/17/91
 Location prosp. 50' W of 5+00N 22+01E
 Chip _____ Channel Grab dump
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____
 Remarks prospect pit on ridge east of main road
qtz bx in monzogranite w/ mafic dikes

Assay for:
 Au Ag Cu Mo Pb Zn Hg As Sb

1718

Reynolds Metals Exploration, Inc.

Project _____ Geologist Winska
 State _____ County _____
 Sec. _____ T. _____ R. _____ Date 4/8
 Location Cycloptic mine
 Chip Chip Channel _____ Grab _____
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____
 Remarks west side - FW of detachment
silic. bx (jasperoid) 50-70' stratigraphically below #686

Assay for:
 Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project _____ Geologist Winska/Irwin
 State _____ County _____
 Sec. _____ T. _____ R. _____ Date 4/8
 Location Cycloptic mine
 Chip _____ Channel _____ Grab _____
 Select _____ Sample Thickness _____
 Ft. _____ Vert. _____ Horiz. _____
 Remarks Central area near truck
Hm bx jasperoid

Assay for:
 Au Ag Cu Mo Pb Zn Hg As Sb

0689

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 AS WELL AS FOR OTHER SAMPLE(S)

Reynolds Metals Exploration, Inc.

Project Recon Geologist Irwin
 State AZ County Mohave
 Sec. T. R. Date 4/9/91
 Location N. of Climax shaft
 Chip Channel Grab

Select Sample Thickness
 Ft. Vert. Horiz.

Remarks 5' west of 693 3' wide
tz + grungy bx
north of shaft

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

(1/1/91)

Reynolds Metals Exploration, Inc.

Project Recon Geologist Winston
 State AZ County Mohave
 Sec. 25 T. 28N R. 19W Date 5/17/91
 Location FRY MINE - Drill site
 Chip Channel Grab

Select Sample Thickness
 Ft. Vert. Horiz.

Remarks Drill cuttings
0-50' composite

Toltec hole # 23 ? or 25?

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project Recon Geologist Winston
 State AZ County Mohave
 Sec. T. R. Date 4/9/91
 Location Climax mine - Lost Basin
 Chip Channel Grab dump

Select Sample Thickness
 Ft. Vert. Horiz.

Remarks main climax shaft
massive buff whk gtz w/ some
hematite ~10' wide N-S strike
80° west dip

0695

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

(1/1/91)

Reynolds Metals Exploration, Inc.

Project Recon Geologist Winston
 State AZ County Mohave
 Sec. 25 T. 28N R. 19W Date 5/17/91
 Location Fry Mine
 Chip Channel Grab

Select Sample Thickness
 Ft. Vert. Horiz.

Remarks Drill cuttings
50-100' composite

0794

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

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Reynolds Metals Exploration, Inc.

Project Recon Geologist WinstonState AZ County MohaveSec. 25 T. 28N R. 19W Date 5/17/91Location Fry Mine

Chip Channel Grab

Select Sample Thickness

Ft. Vert. Horiz.

Remarks drill cuttings300-350'

0799

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

Reynolds Metals Exploration, Inc.

Project Recon Geologist WinstonState AZ County MohaveSec. 25 T. 28N R. 19W Date 5/17/91Location Fry Mine

Chip Channel Grab

Select Sample Thickness

Ft. Vert. Horiz.

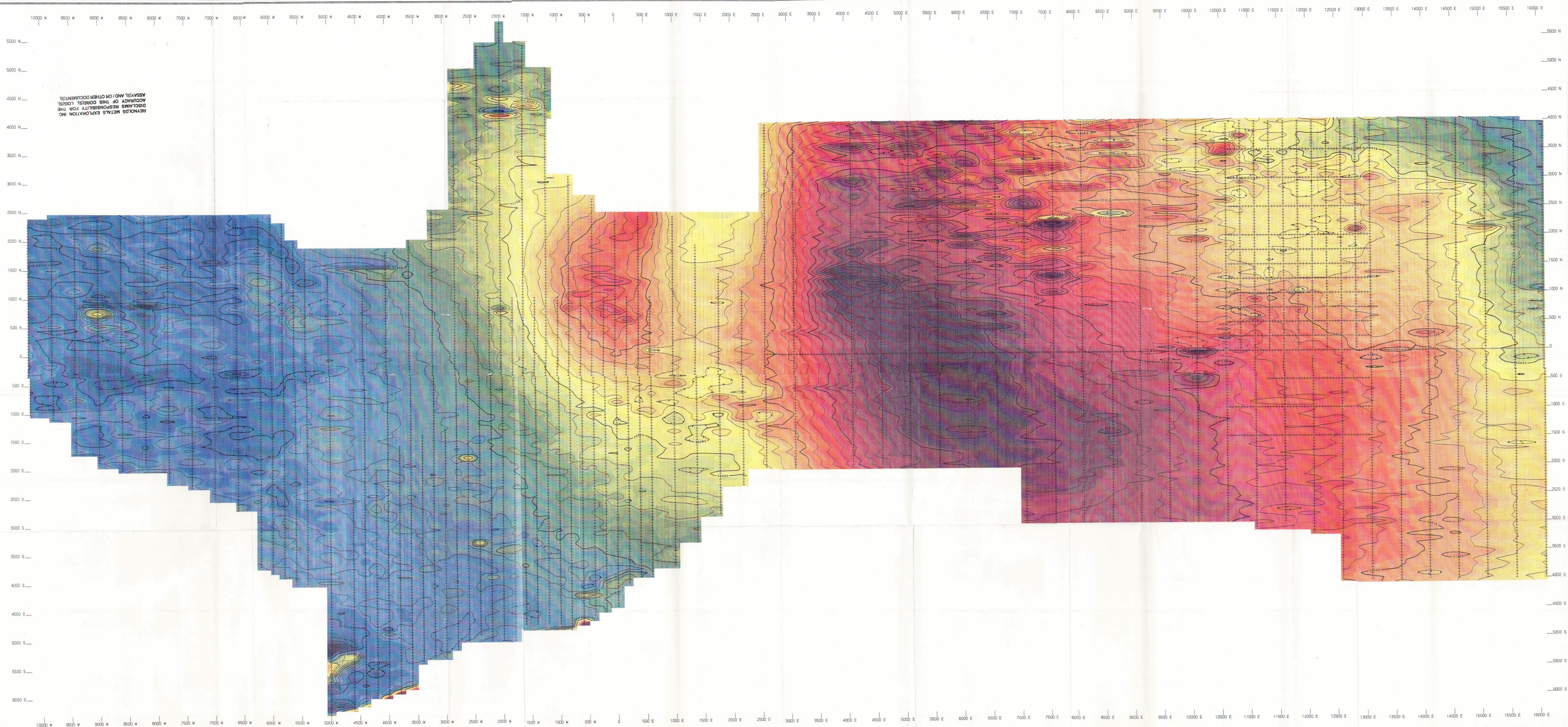
Remarks drill cuttings composite350-400' TD

0800

Assay for:

Au Ag Cu Mo Pb Zn Hg As Sb

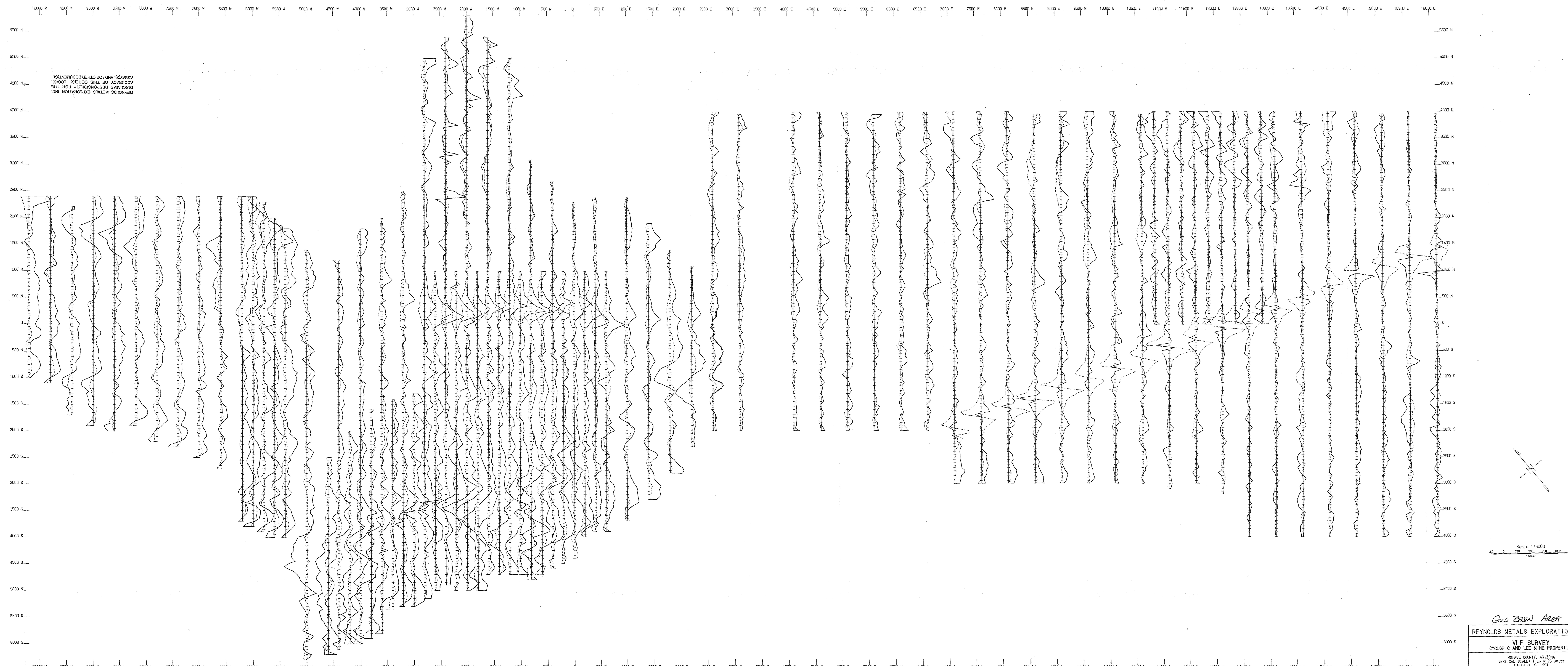
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Scale 1:6000
0 200 400 600 800 1000 1200
(Feet)

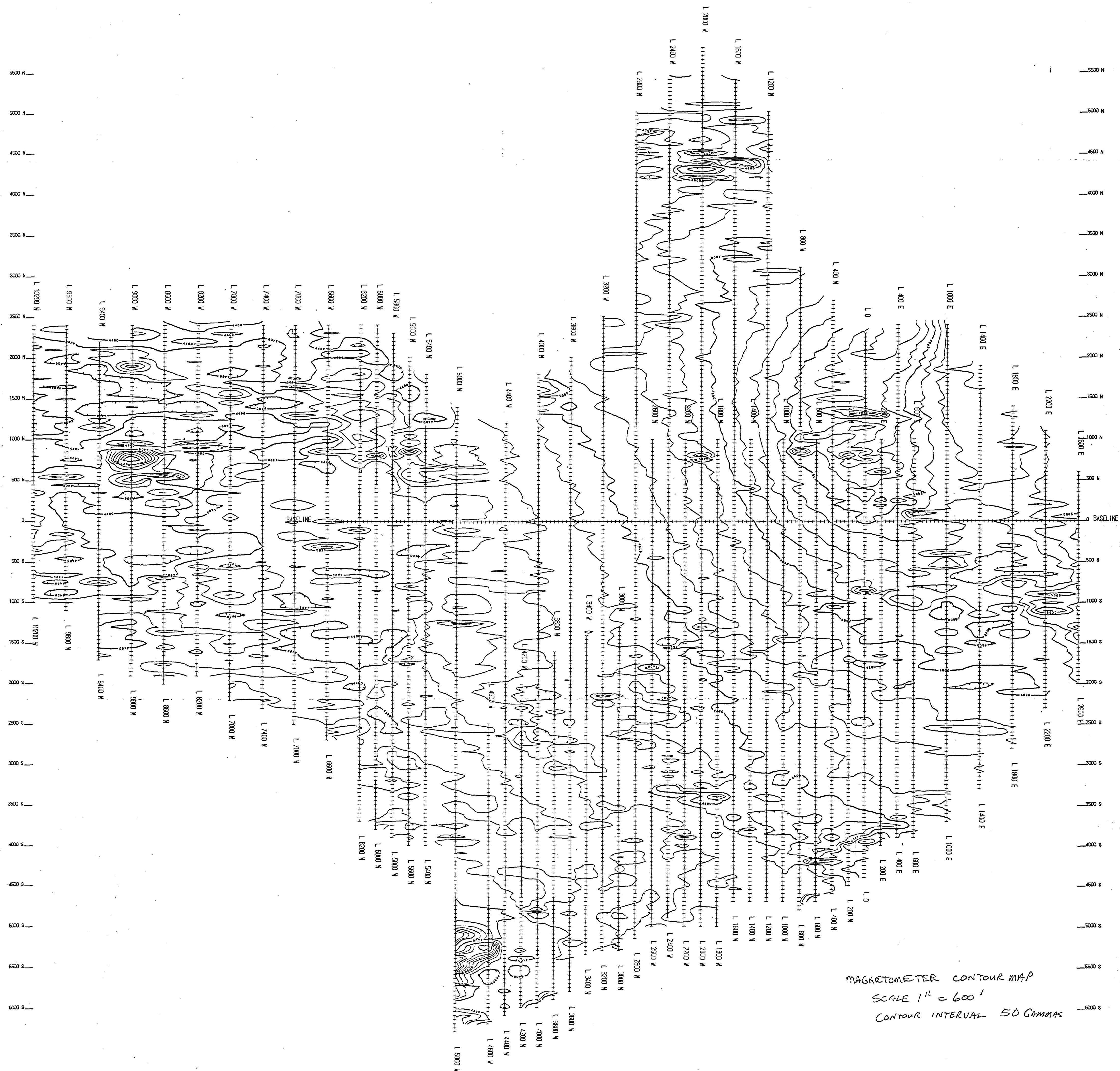
Gold Basin Area
REYNOLDS METALS EXPLORATION INC.
TOTAL FIELD MAGNETIC SURVEY
CYCLOP AND LEE MINE PROPERTIES
MOHAVE COUNTY, ARIZONA
CONTOUR INTERVAL: 50 Gauss
DATE: JULY, 1991
QUANTECH CONSULTING INC.



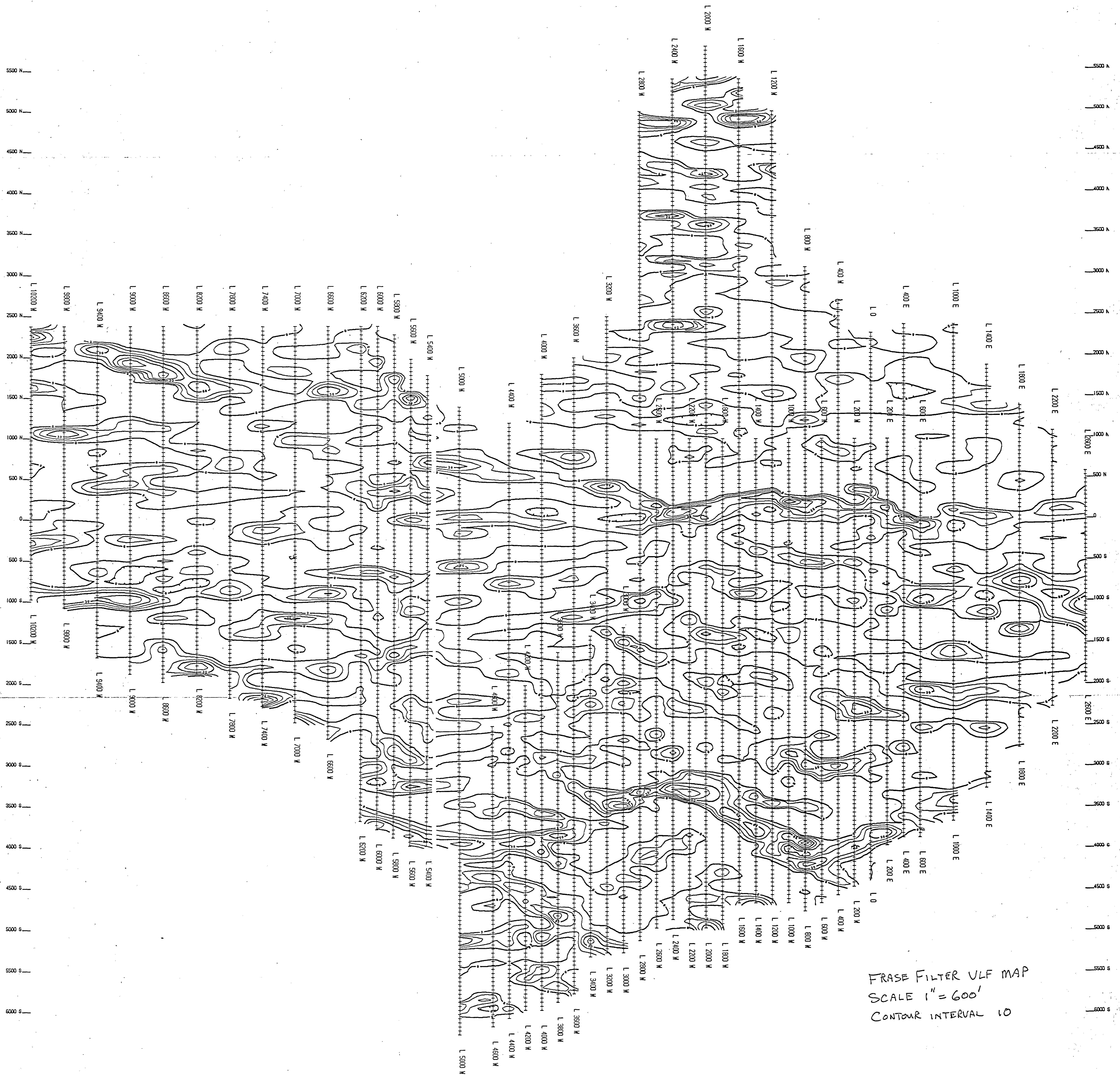
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Scale 1:6000
250 0 250 500 750 1000 1250
(feet)

Gold Basin Area
REYNOLDS METALS EXPLORATION INC.
VLF SURVEY
CYCLOPIC AND LEE MINE PROPERTIES
MOHAVE COUNTY, ARIZONA
VERTICAL SCALE: 1 cm = 25 units
DATE: JULY, 1991
QUANTECH CONSULTING INC.



MAGNETOMETER CONTOUR MAP
SCALE 1" = 600'
CONTOUR INTERVAL 50 GAMMAS



FRASE FILTER VLF MAP
SCALE 1" = 600'
CONTOUR INTERVAL 10

May 29, 1987

R.L. Brown
New York Office

May 1987
Monthly Report
Mohave County, AZ

FRK

	<u>Field Days</u>	<u>Office Days</u>	<u>Samples Collected</u>	<u>Assay Cost</u>	<u>Expense Account</u>	<u>Truck Expense</u>
To Date	37	28	124	\$1,314.80	\$3,412.71	\$1,499.89
May 1987	8	6	119	1,208.30	417.16	477.95

Work this month concentrated on evaluation of 3 major solicited submittals: Gold Basin (North Cyclopic), Secret Pass, and Mossback. At each of these areas all significant targets appear to have been tested and additional sampling/examination has not turned up viable drill targets for Asarco.

At Gold Basin an iron oxide color anomaly 2 miles NW on strike with the Cyclopic Mine synform/stacked listric fault breccia zone was sampled. 1982 Sampling by U.S. Borax in Sec. 24, T28N, R19W containing the color anomaly showed 14 of 36 rock samples with .02-.06 ppm Au with one 6.5 ppm Au dump sample and a mean of 1.3 ppm Ag for all 36 samples. The hematic-goethitic color anomaly is developed in soil and subcrop over gneissic diorite/granite bedrock and appears similar to that found at the Cyclopic Mine. The sampled anomaly is also in a similar structural/topographic basin situation to Cyclopic with potential for placer and supergene/lag enrichment beneath shallow cover that might be tested by a backhoe trenching or shallow track-drilling program. 10 Rock and 90 <10 mesh soil samples were collected on a 100-200' grid over a 3000' x 500-800' area covering the color anomaly. The Au soil values showed 18 of 90 samples ≥ 0.02 ppm with 9 ≥ 0.03 ppm and 3: .04-.06 ppm. The higher soil values were narrowly concentrated along the NNW striking 80°W dipping (Rock Assays .006-3.5 ppm Au) hematic shear-breccia zone trend and a 400 x 400' area 500 feet to the north which showed an average .03 ppm from 8 samples. Examination of float, subcrop in this area showed weak chloritic alteration, green feldspars and thin sideritic veinlets that probably carry the Au values, but topography here suggests that a well mineralized low angle breccia zone, if present, would have a high stripping-ratio. The area with the most intense hematitic color anomaly showed generally .01 ppm Au or less. Only 6 of 100 Ag values were $>.2$ ppm - usually .2 ppm suggesting a high analytical background for U.S. Borax results.

Overall the weak and restricted anomalies in the sampled zone do not suggest a viable target for further testing. Some 400+ samples assayed for 10 elements over the 59 claims in the property do not suggest the possibility of more than 1 m.t. @ 0.04 opt Au shallow potential. 16 (5645' total) - U.S. Borax RDH (1983) on the west flank of the Cyclopic synform showed that +.01 opt, open-pittable Au seldom significantly spreads out into low angle breccia zones

from higher-angle, better mineralized feeders. At present the Gold Basin/Lost Basin districts even with widespread but spotty Au shows must be relegated to a lower priority reconnaissance area.

At Secret Pass on the east margin of the Black Range 10 miles north of Oatman, Santa Fe Mining has spent some \$1 million drilling 90+ DH (32,000' total) developing some 45,000 oz. "geologic resource" OP-UG Au (details in Mohave Co. Au "Reserves" memo 3/16/87). The best stockwork-fissure vein mineralization is found along the SW boundary of a Precambrian granite horst in contact with mid-Tertiary andesitic volcanics--all locally intruded by rhyolite dike swarms. The NW-striking, high-angle controlling structures (cauldron margin?) split and splay to the NW rolling to lower angles into the listric normal detachment breccia mineralized systems (6-8 miles NW) at Union Pass-Frisco and Roadside Mines. E-W to NE cross structures localize quartz-pyrite Au mineralization with minor sericitic K-spar flooding. Three days field plus several days of office work with Santa Fe's voluminous data package (+400 assays, many with 16 elements - extensive mapping at several scales, drill logs and sections) failed to turn up any significant area worthy of additional testing although the volcanics are among the most spectacular I have ever seen. Santa Fe has reclaimed their drill roads and is already reducing their voluminous holdings - 15 sq. miles including their fee-checkerboard burro pasture.

This project is a good example of how the railroad, successors to the oil companies, spend exploration dollars. However, in all fairness to Santa Fe, an early DH, unfortunately down structure, cut 90' of 0.60 opt Au with 60' @ 0.10 opt below.

At the skeleton of Crown Resources Mossback property (260 claims down from 1200 HIMCO claims) several field days of review/reconnaissance failed to turn up any high priority untested targets. This area is essentially the eastern exposed cauldron margin, central resurgent dome/intrusive portion of the nested cauldron complex which includes the Gold Road-Oatman complex vein systems several miles to the south. Although the property covers extensive hot spring zones (siliceous sinter, jarosite \pm alunite disseminated pyrite, widespread clay-sericite alteration) only traces of Au-Ag (900 samples) and weak Hg anomalies are found on the surface except in structures. Several drilling campaigns by Houston, Meridian and Crown have found only a few 0.0X ppm Au zones at OP depths (28 RDH: 8700' total). The vein-breccia systems lacing the claims locally show several ppm Au in surface cuts, have negligible production, but only local +10' intercepts of +1 ppm mineralization at depth with insignificant stockwork disseminated mineralization. It would appear that there is little chance of developing a significant bulk-tonnage target in this part of the district. However, at the Moss Mine adjoining to the west Earl Harrison has installed a new headframe and hoist and is retimbering the shaft for further testing/development of a reported $\frac{1}{2}$ m.t. @ .06 opt Au including 90,000 @ 0.13 opt Au. 1940 Asarco sampling suggests these reserves are possible.

16 Samples were taken at the Liberty Mine color anomaly (Sec. 32, 33, T27N, R21W) 1 mile SE of the Van Deeman deposit (2.2 m.t. @ .042 opt Au) in Precambrian mica schist, granitic and dioritic gneiss. This is another stacked

listric fault breccia situation with minor UG production from flat stopes where intersected by higher angle feeders. Values across several feet of structure range up to 4-18 ppm Au and 38 ppm Ag. Freeport drilled ± 22 RDH in the property in 1985; my results from cuttings run from $<.02-.2$ ppm Au. The Freeport geologist said that they only encountered a few 5-10' zones of 0.1 opt Au near to high-low angle breccia intersections and that below the oxidization level ($\pm 100'$) values dropped off sharply. Freeport has returned the property to the Kunkes, the underlying claimants of most of the nearby countryside including Van Deeman, who have promised to show me the data from Liberty and their other holdings.

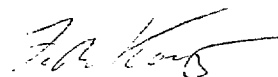
At Van Deeman Arizona Star/Fischer Watt has started a 10,000 foot step-out and fill-in RDH program. They will also be drilling a juicy-looking similar area several miles to the north next to Lake Mead Nat. Rec. Area where Amselco locally got encouragement 4 years ago.

At the Gold Bug vein 1 mile SE of the Liberty, Ivy Minerals has essentially completed their shaft refurbishment and will start breaking their 300T ± 4 opt Au rock plus 5000T of 1 opt Au in June (possibly shipping to Asarco smelters). They are collecting old mill parts for assembly when they pay-back their development costs and are starting a minor UG DDH program to locate vein splits.

Chevron is reportedly now drilling at Mockingbird. No new drilling activity has taken place at Galli Exploration's Pilgrim property. Ed Huskinson, a Kingman geologist, is evaluating the Frisco property for "Toronto Interests" and will track-drill this summer. Sharon Steel has been negotiating with 2 companies (much more seriously since Chapter 11 proceedings): Royal Gold Resources a Denver company trying to put together a package of potential gold mines and an unnamed major Australian mining company (no comment if Western Mining) for the Gold Road property.

No new work is planned for Mohave Co. until late fall, although short reports and ERS sheets will trickle out in the near future. See Esmeralda County report for time forecast.

FRK:mek


F. R. Koutz

cc: W.L. Kurtz
J.D. Sell

May 31, 1985

J. D. Sell
Tucson Office

Gold Basin District
Mohave Cu, etc.
USGS Bull. 397 (1909)

Pages 118-127 discuss subject district and two properties -- Cyclopic and Senator sound like they occur in detachment type structures. In addition the general area to the north is described by the USGS Heavy Metals Program (USGS Circular 560) as containing .01 to .02 oz. gold per cubic yard with potential of plus 500 million cubic yards -- it is unclear whether these values come from the "average" pediment gravels or whether they are from the more recent gullies cutting the gravels. At any rate, both bedrock and gravels sound of above average exploration interest.


W. L. Kurtz

WLK:mek

cc: R.L. Brown

*I'll plan on a field review of the region.
Amoco may be dropping out of the picture.*



June 1, 1987

To: J. D. Sell

From: F. R. Koutz

Corn-Ahern-Loghry Claims
Gold Basin Area
Mohave County, Arizona

Summary: 100 Soil and rock samples taken over a $\frac{1}{2}$ mile long x $\pm 600'$ wide iron oxide color anomaly with previously reported low level anomalies of Au and other elements. This color zone is on a strike between the Cyclopic and Senator mine detachment fault breccias. Results, although locally moderately anomalous, did not have the strength or extent to suggest a viable drill target for shallow open-pit mineralization.

There is widespread, spotty gold mineralization in Gold Basin mostly in narrow quartz veins near the contacts of late Cretaceous two-mica granites into Precambrian granites and granitic to granodioritic gneisses. Most of this mineralization is in moderate to high-angle structures with limited production (a few 1000 T maximum), only minor stockwork-dissemination and thus minimal potential for a bulk tonnage deposit.

However, there are a series of Mid-Late Tertiary stacked, listric fault-breccia (detachment) zones that extend for 6-8 miles NW through the north central White Hills (Fig. 1) that also localize mineralization. This multistage mineralization took place during low-angle faulting and is probably related to Tertiary intrusives in the area (new Au mineralization and/or remobilization of earlier mineralization).

The best example of this mineralization is the Cyclopic mine (Fig. 2) which produced some 60,000 T of 0.35 opt Au mostly from quartz-breccia and clay-gouge immediately above a basal synformal warp in the lowest detachment surface. Trenching and shallow drilling of the Cyclopic-Fry zone by underlying claim owners Wyman and King and others including Inspiration in the last 10-15 years has indicated some 300,000 T @ 0.15 opt Au (including 67,000 T @ 0.28 opt Au) with about 5 m.t. and maybe 12 m.t. @ .05 opt possible. This drill data is apparently on file with the Arizona Dept. of Mineral Resources in Phoenix. The tails ($\pm 10,000$ T) reportedly ran 0.08 opt Au. The Cyclopic property is presently under lease to Saratoga Mines--a Canadian (?) group.

The last work (1942) at Cyclopic was by open-pit methods which exposes the detailed control of mineralization by higher angle faults. Both synthetic listric normal faults and primarily antithetic faults to the detachment synform were mineralized with the highest grades of Au-bearing hematitic (pyrite) silica breccia. These higher-angle zones were originally mined underground. The higher angle faults served as feeders to more poorly mineralized lower-angle listric detachment zones. NE-striking high-angle

faults are largely post-mineral and locally offset the NW-striking mineralized zones. A recent 4 page article from Economic Geology (Nov. 1986, p. 1556 - attached) excellently describes mineralization at the Cyclopic Mine and Gold Basin District, although I'm not sure I agree with all the points made.

In 1981, Consulting Geologists R. Corn and R. Ahern interested U.S. Borax in the area and in 1982 59 GB claims were staked. In 1982-83 Corn and Ahern mapped the district at various scales (down to 1" = 500') collected some 370 geochemical samples (assays for 10 elements) and proposed a drilling program to test for potential widespread subhorizontal crush zone mineralization west of the Cyclopic open pit beneath upper plate and alluvial cover (Fig. 2). Some 16 RCRDH (5645') were completed on 200-800' centers in 4 lines spread over a mile NW-SE. Seven holes cut anomalous mineralization over 0.3 ppm Au in 5' intervals (total only 125'). Only 25' were >1 ppm. The two best holes crossed the "Red Cloud Zone" a silicified hematitic fault breccia dipping 50° SSW which had values of 1.7 ppm Au over a width of 60' on the surface. Only several 100,000 T @ .03-.05 opt Au potential mineralization can be indicated by U.S. Borax's drilling-considerably less than the 50 m.t. @ ≥.05 opt they were looking for.

After no luck in farming out the property Borax returned the claims in 1985 to Corn-Ahern who brought in J.D. Loghry to promote the claims for a share. Loghry got Icarus Exploration-Grand Teton Industries (Canadian money) on the property. They ripped parts of the Red Cloud zone with a small CAT. Loghry took several dozen more chip channels across the zone (21 unweighted assays averaged 0.11 opt Au) drilled by Borax at depth and made an excellent 1" = 100' geologic map. Icarus dropped out of the project this March.

Loghry's mapping shows that the WNW striking zone is broken and offset by a number of NNE to ENE faults. Even if hidden offset zones were similarly mineralized including the RDH GB-14 to 16 area 4000' WNW along the upper-middle plate contact it would be difficult to come up with more than 2 m.t. @ the .01-.04 opt grades cut at depth with very high stripping ratios. The high surface values must be discounted as lag-supergene enrichment so common in the desert. It appears that away from the Cyclopic trend itself mineralization although anomalous does not significantly spread into low angle crush zones from higher angle feeders. The Red Cloud zone could, however, make a viable, small "mom and pop" type heap leach operation. Examination of the topography NE of the Red Cloud shows that the Cyclopic crushed zone is along a drainage and significant enrichment by placer/lag processes was probably necessary to make much of the bulk tonnage dragline-mined deposit profitable.

The only other area on the GB claims not tested by drilling or extensive sampling was the area in Sec. 24 W and NW of the Fry Mine. This area (Fig. 2) is also in the middle plate window of the stacked listric faults. It is also on strike with high angle-mineralized breccias in the Cyclopic Mine rather than the more poorly mineralized WNW fissures in the Red Cloud zone showing only minor dissemination into low angle fault breccia zones. The central

portion of Section 24 is also in a topographic basin, although less well developed than Cyclopic, and has a much better chance of showing supergene/lag enrichment like the Cyclopic compared to the Red Cloud zone which is on a ridge crest. Low-angle mineralized breccia is also found on trend one mile NW of Section 24 at the Senator Mine and could underlie Section 24.

Sampling by Corn and Ahern showed 14 of 36 rock samples in Sec. 24 with .02-.06 ppm Au with one 6.5 ppm Au dump sample and a mean of 1.3 ppm Ag for all 36 samples. These results, while low, are similar to those around mineralized structures to the SE. Most of the higher Sec. 24 Au values are also associated with a gneissic granodiorite body (Fig. 2) within the middle plate granite and granite-gneiss package. More mafic rocks usually make better hosts to Au mineralization in the region (e.g., Van Deemen, Liberty, Gold Bug, Mockingbird) and Tertiary lamprophyre dikes cropping out and encountered in GB drill holes often have a gold "kick."

Parts of the granodiorite and surrounding granite gneisses show a distinct N to NNW trending iron oxide color anomaly. This color anomaly is moderately to strongly hematitic south of the small shaft/pit with the 6.5 ppm Au value (OE, 100S, Figure 3) from the NW shear zone. The color anomaly is weaker and more goethitic to the north. The hematitic zone is similar in appearance to that around the Cyclopic, but is primarily developed in residual and alluvial soil and rotten shallow subcrop. Thus this area in the E/2 of the W/2 of Sec. 24 was a potential hidden mineralized zone that might be easily tested by backhoe trenching or angle trak-drilling if a significant area of anomalous Au were found. Further NW reconnaissance toward the Senator Mine in Sec. 14 shows primarily a thick section of upper plate fanglomerate.

When Sec. 24 was originally visited in March (partially snow-covered) it was clear that there was not enough outcrop to adequately close-space sample, so a grid soil sampling program was planned. In late April - early May 91 soil and 9 rock samples were taken from the 2800' N-S by 400-800' E-W area on a 100-200' grid covering the color anomaly. Grid spacing was generally 100' over the strongest hematitic anomaly and 200'x100' to 200'x200' elsewhere. A number of areas could not be sampled because of recent alluvium and few others were kept on a 200' grid because nearby outcrop/float appeared almost fresh. Samples were sieved to <10 mesh in the field--finer sizes were not practical. The "B"-soil horizon sampled was below the desert gravel "armor" and often had a fair organic content from roots. The soil was primarily silt-sized above rotten, shattered bedrock-subcrop which was surprisingly often quite shallow: 6"-1'. Much of the slit may be eolian. Notes on each sample are copied on the attached assay sheet.

The assays (.002 ppm Au, .2 ppm Ag - lower limits both total digestion AA) of 88 grid soil samples showed 8 values >30 ppb with 9: 20-30 ppb and 19: 10-20 ppb or a total of 36 values >10 ppb. Maximum values (2) were 60 ppb (Fig. 3). The higher soil values were concentrated along a NNW striking zone corresponding to the N20-30W, 80-90° west dipping shear zone exposed in the pit with rock values of 6-4000 ppb Au. The best values, however, were about 800' N to NW of the pit and cover a 700' NE by 350' NW zone with 15 values averaging

27 ppb Au. Unfortunately this zone was not as closely spaced sampled as the much stronger hematitic-stained zone to the west and south of the pit which usually showed <10 ppb Au. Sample notes of float and subcrop in the higher +20 ppm anomalous areas show weak chloritic alteration of the granodiorite, light green plagioclase and thin brown carbonate veinlets on fractures that probably carry Au values according to R. Corn. Corn notes a halo of weak stockwork siderite veinlets over mineralization to the SE that I was only partially able to confirm. There appeared to be no general relationship in the intensity of the color anomaly nor white quartz veins to gold.

Overall it would appear that the soil Au values are quite discouraging because they are not high or widespread enough to indicate a drill target of significant size at relatively shallow depths. Although I have no direct experience with previous soil geochem. in this region, I would have expected a significant number of values >50 ppb and many over 100 ppb.

Only 5 of 88 soil Ag values showed the detection limit of 0.2 ppm suggesting a high analytical background for U.S. Borax results. Although Hg and Pb provided useful geochemical halos in the U.S. Borax samples no other elements were run because Au itself provided the best geochemical indicator of significant mineralization elsewhere in the district. Zn, Cu, W, Hg showed in general a better, more useful correlation to Au than As, Sb or Mo.

The 6 and 10' horizontal cuts across structure in the OW-100S pit showed .17-.006 ppm while the previous sampled (6.5 ppm Au) pile on tin ran 3.5-4.0 ppm. This material when sieved ran 3.5 ppm for 10-80 mesh and >15 ppm for <80 mesh. This is in contrast to U.S. Borax results at the NW end of the Cyclopic pit which showed 61% of the Au >20 mesh. The 1-2 T of muck on tin is probably from a small pod. It would appear that much of the iron oxide color anomaly is after mafic minerals in the granodiorite although goethitic pseudomorphs after pyrite were common and a few relict pyrite grains in grey quartz \pm brown carbonate veinlets were noted.

Two samples of Cyclopic mill tails ran 10 and 1 ppm Au. U.S. Borax got 1.65 ppm from one sample. The reported average of 0.08 opt Au in remaining tails ($\pm 10,000$ T) appears reasonable. The <10 mesh cuttings sample from the Cyclopic well about 1000' SE of the soil sampled area ran only .036 ppm Au while an unsieved cutting sample by U.S. Borax was <.02 ppm. This 375' well showed moderately chloritized granite and thin white quartz and carbonate veinlets with trace goethite after pyrite.

These results do not suggest a viable drilling target in the sampled area. Additional or extended sampling of the Sec. 24 areas with higher values would provide better control but would probably not provide a better target. The NE area with highest values is also on the slope of one of the higher hills with +100' stripping to a projected Cyclopic crushed zone. It is worth examining the drill data Wyman and King have filed with the Arizona Dept. of Mineral Resources in Phoenix and contacting Saratoga Mines for any new data

they have developed that might contribute to drilling targets. However, at present the Cyclopic and the Gold Basin/Last Basin Districts with widespread but spotty gold must be relegated to a lower priority reconnaissance area.


Fleetwood R. Koutz

FRK:mek

Att: 3 Fig.

Assays (TAJ-482) with notes

Econ. Geol. Article

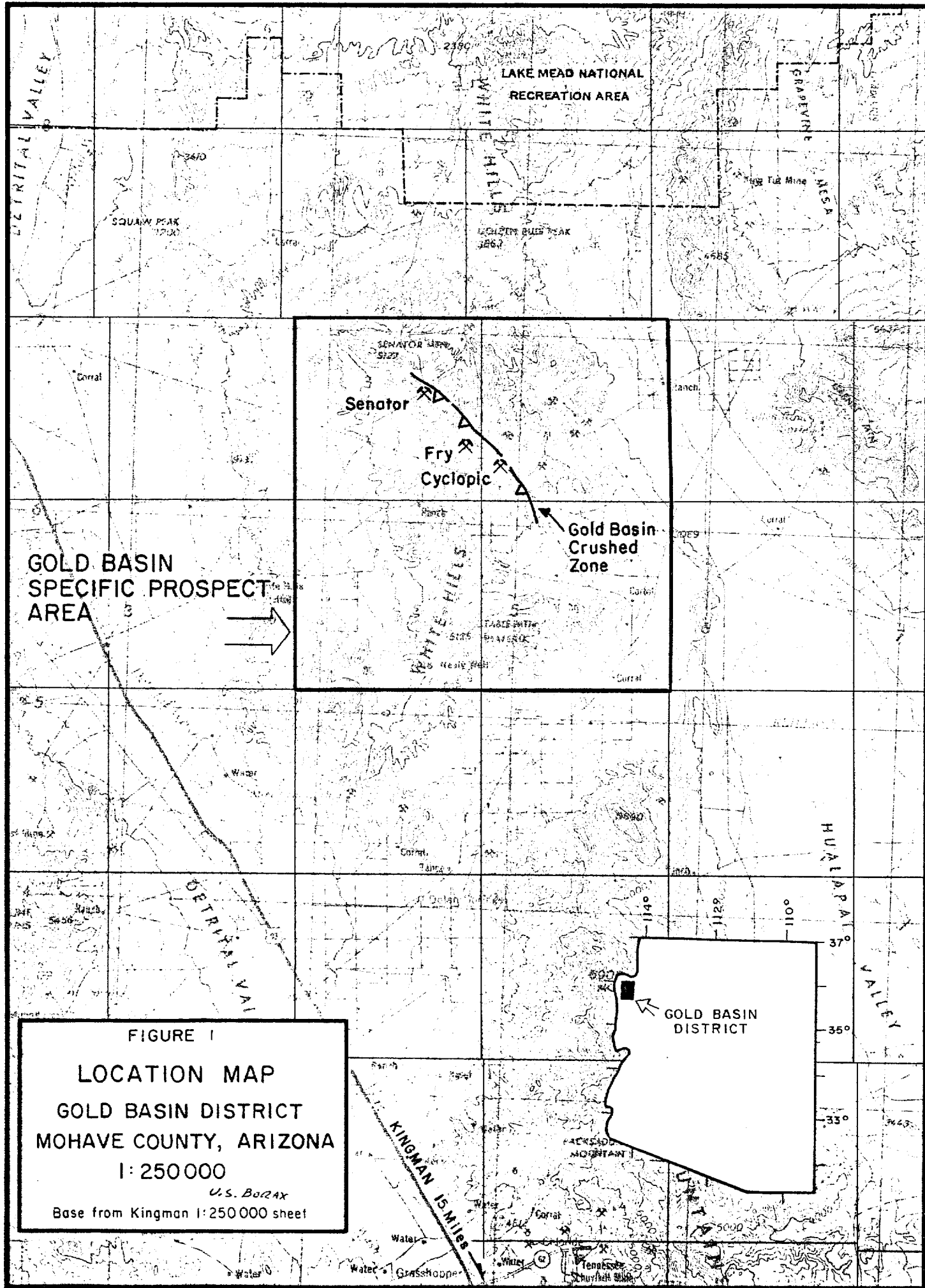
Corn-Ahren-Loghry Data Package to files.

R 20 W

R 19 W

R 18 W

R 17 W



T 29 N

T 28 N

T 27 N

T 26 N

FIGURE 1

LOCATION MAP
GOLD BASIN DISTRICT
MOHAVE COUNTY, ARIZONA
1:250 000

U.S. BORAX

Base from Kingman 1:250 000 sheet

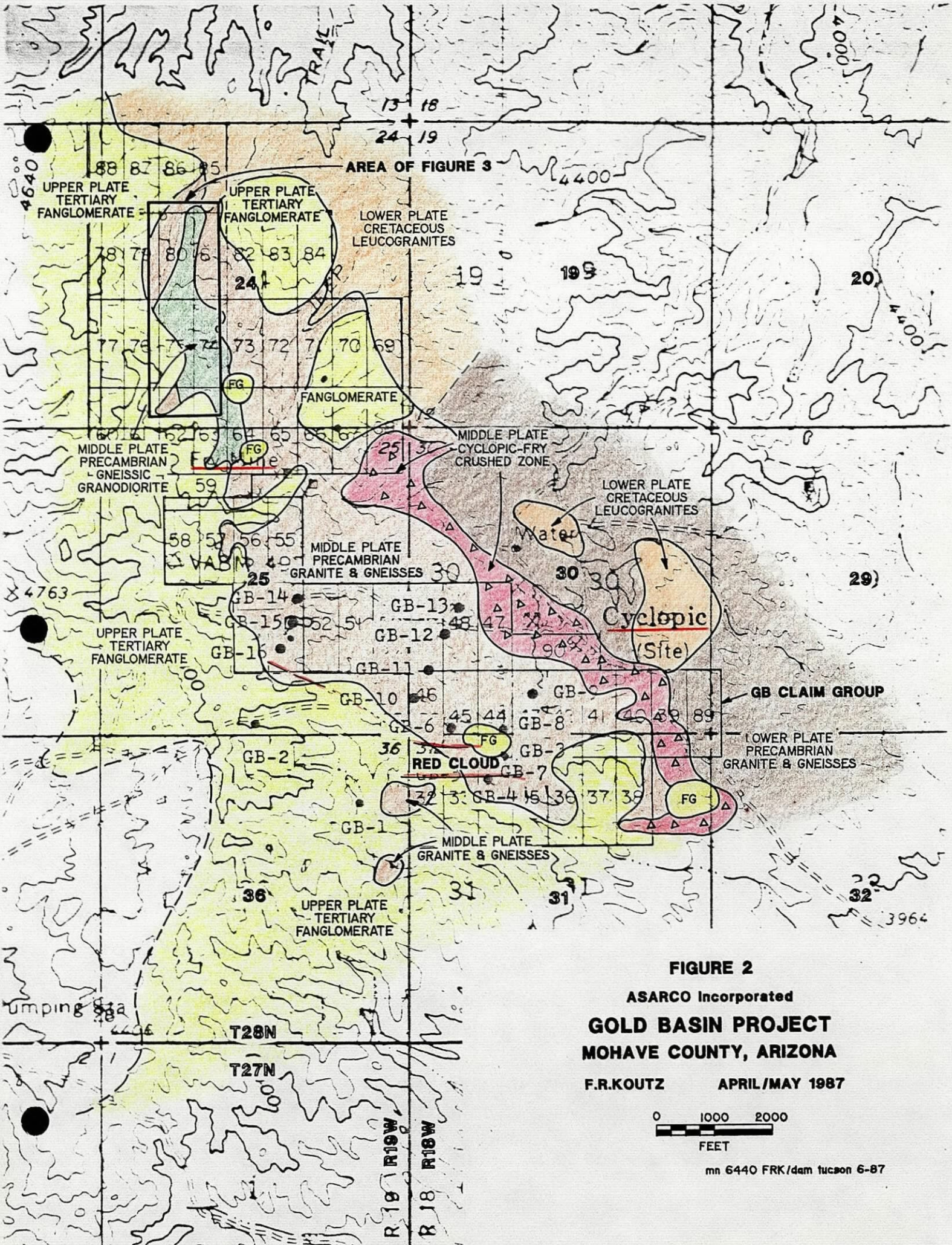


FIGURE 2

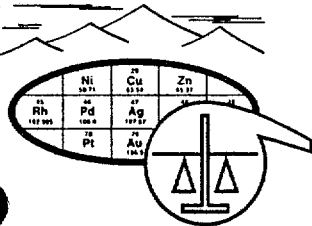
**ASARCO Incorporated
GOLD BASIN PROJECT
MOHAVE COUNTY, ARIZONA**

F.R.KOUTZ

APRIL/MAY 1987



mn 6440 FRK/dam tucson 6-87



SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

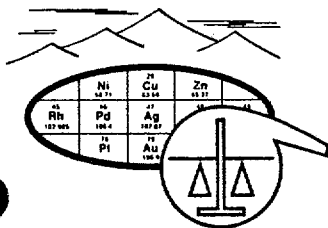
JOB NO. TAJ 482
May 26, 1987
PROJECT NO.: GBN
SHIPMENT NO. 1
PAGE 1 OF 4

ASARCO INCORPORATED
Attn: Mr. Fleetwood R. Koutz
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Gold Basin N.
w/2 SEC 24
T 28N
R 19W

Analysis of 93 Soil and 7 Rock Chip Samples.

ITEM	SAMPLE NUMBER	Au (ppm)	Ag (ppm)
L 10 MESH SOIL SAMPLES			FIELD SAMPLE NOTES
1	7E-10S	.028-	< .2 30W slope LT TAN BR. SOIL - GRADY N + SUBCROP
2	5E-7S	.007	< .2 FLAT RIDGE - SCHIST + GRADY N 24" Q12 LG.
3	4E-10.5S	.006	< .2 5° E SLOPE Tgl (?) LAG.
4	4E-9S	.011	< .2 5° S SLOPE LT. TAN BROWN
5	4E-8S	.005	< .2 5° W SLOPE + 7" of Mtl (FLAT) FUSION @ 8" GRD - TAN GRN FLINT
6	4E-7S	.008	< .2 15° W SLOPE M. TAN BR. CLINT
7	4E-5S	.003	< .2 FLAT RIDGE - Tgl - (4) ? + W. Q12. M. TAN BR.
8	4E-3S	.003	< .2 20° SLOPE - LT TAN.
9	2.5E-7S	.004	< .2 @ SADDLE BX'W GRD FLINT - W. Q12 LT TAN BR. FUSION @ 8"
10	2E-9S	.006	< .2 SUBCROP @ 8" LT TAN BROWN
11	2E-8.2S	.004	< .2 M. TAN BR. - RED. - 4" W. Q12 FL. 2-Subcrop
12	2E-7S	.006	< .2 FLAT - LT TAN BR.
13	2E-6S	.003	< .2 15° E TO AVOID DOL - 10° SLOPE
14	2E-4S	.003	< .2 15° SLOPE LT TAN BR.
15	2E-3S	.010	< .2 20° SLOPE LT TAN BROWN FUSION
16	2E-2S	.032 -	< .2 10° SLOPE LAMINATE OR MIXED NATURE IN SOIL - FRESH - GRN ON SLOPE
17	2E-16N	.010	< .2 30° E SLOPE 24, 36, 48 W. Q12. SUBCROP @ 6"
18	1.5E-6.5S	.008	< .2 - W. Q12 FLINT - W. G. UNITS - CLINITE GRD - GRN
19	1.5E-9N	.013	< .2 5° E SLOPE M. - LT TAN BROWN - GRD - N - 136 flt
20	1.5E-12N	.006	< .2 25° W SLOPE M. TAN BROWN 20" M. TAN BR. 11" CHL. 22" H. 1706. T. TAN BR. ALCHALCOA!
21	.6E-7N	.007	< .2 20° TCH, 11" M. ST. GR - SCHIST (XAND. 3?)
22	.5E-6.5S	.005	< .2 FLAT RIDGE BROWN - 6" GRD M. TAN BROWN 1-25 flt
23	1E-5S	.016	< .2 40° FLAT - M. TAN BROWN, 11" ST. Q12 FLINT 5/20 - GRN
24	1E-3.5S	.006	< .2 15° SW SLOPE, 11" M. ST. GRD - LT TAN BROWN
25	1E-2S	.013	< .2 20° SLOPE M. TAN BR. - 20" FUSION GRD - TAN GRN FLINT / LAG



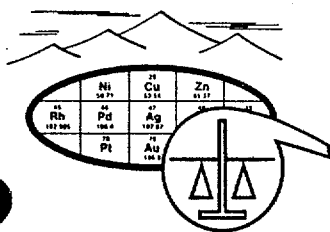
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JOB NO. TAJ 482
 May 26, 1987
 PAGE 2 OF 4

108' S35E of
 GB 80 SEC
 6875 NEC

→

ITEM	SAMPLE NUMBER	Au (ppm)	Ag (ppm)
26	1E-1S	.018	.2 - NO NOTES
27	1E-0N	.010	<.2 m. TAN. Brown, 1 1/2", 189, 100FX BULKY @ 8"
28	1E-3N	.009	<.2 10'E slope E-silt/clay - Fresh GAD-GN - 1/2"
29	1E-5N	.026	.2 20' NW slope, m. TAN Br. 1 1/2" G. 1/2" GAD-GN Fresh
30	0W-8S	.016	<.2 m. TAN - T. G. (?) 1/2" with T. Ch. T. sand T. TAN. Br. 100
31	0W-6.4S	.009	<.2 NO NOTES
32	0W-5.5S	.006	<.2 m. TAN Brown Rocky Soil Shallow subsoil
33	0W-4.7S	.007	<.2 " " " " " "
34	0W-4S	.008	<.2 m. TAN Br.
35	0W-3S	.007	<.2 (15'E) to ARID QAC LT. TAN RED
36	0W-2S	.003	<.2 5' slope LT. TAN RED.
37	15A <80	10.000*	1.4 < 10' SUMP of 0W-15A pit
38	15A 10-80	3.500	.6 10-SUMP SH
39	0W-.75S	.032	<.2 CN tip of pit, subsoil ch. TAN Reddish
40	0W-0N	.022	<.2 m. TAN Brown 5" pit
41	0W-2N	.019	<.2 m. TAN Br. 8" pit 20' W slope & TAN
42	0W-4N	.028	<.2 25' W. slope - yrd-gn log LT. TAN Brown T. TAN. Red Sp.
43	0W-6N	.060	<.2 30' NW slope. H. V. calc. wh. QZ & yrd-gn log
44	0W-7N	.046	<.2 10' NW slope - GAD-GN log, w. ch. calc. T. wh. QZ.
45	0W-10N	.036	<.2 10' NE " - yrd-gn log - yrd-gn log - yrd-gn log - yrd-gn log
46	0W-13N	.004	<.2 LT. TAN Brown - GAD-GN log - m. calc. (QZ?)
47	0W-14N	.004	<.2 10' S slope 1/2" stained GAD-GN - LT. TAN Brown.
48	0W-16N	.005	<.2 8' S slope - m. TAN Brown Lox wh. QZ log.
49	0W-17N	.005	<.2 5' slope " " " GAD-GN log
50	0W-18N	.007	<.2 5' slope 1 1/2" 1/2" 1/2" - m. TAN Br. 1'



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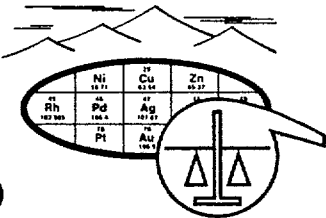
(602) 622-4836

JOB NO. TAJ 482

May 26, 1987

PAGE 3 OF 4

ITEM	SAMPLE NUMBER	Au (ppm)	Ag (ppm)
51	1W-6S	.005	<.2 FLAT - TIGHT TO S. incl. Brown I Subcrop
52	1W-5S	.011	<.2 SOME slope. Hm st. GRD log - M. Red. Brown
53	1W-4S	.003	<.2 S.S. slope M. Red. Brown - Subcrop @ 8"
54	1W-3S	.004	<.2 S.S. " M. Red. Brown (Hm)
55	1W-2S	.008	.2 S.S. slope M. LT. Red. Brown - Loc. w. Qtz. v. m. calc. calc. blacked gray @ 6"
56	1W-1S	.009	<.2 S.S. " M. Red. Brown (Hm) Subcrop @ 8"
57	1W-0N	.006	<.2 M. TAN. BR. 20° slope w. subcr. GRD
58	1W-1N	.005	<.2 - NO NOTES
59	1W-12N	<.002	<.2 5° SE slope, M. TAN. Brown, Loc. w. Qtz. "w. m. calc. calc. blacked gray @ 6"
60	2W-4S	.002	<.2 M. TAN. BR. S.S. slope. BK. org. clots on R. w. in soil - clayey
61	2W-3S	.007	<.2 M. TAN. RED S.S. slope - MVT. w. m. calc. calc. blacked gray @ 6"
62	2W-2S	.022-	<.2 M. TAN. BR. S.S. slope
63	2W-1S	.010	<.2 M. TAN. RED 10° slope - some clay frags
64	2W-0N	.005	<.2 M. TAN. BR. - Flat ridge
65	2W-1N	.004	<.2 20° slope M. TAN. BR. - GRD. SN log
66	2W-2N	<.002	<.2 10° slope " " " " " " " " " " " "
67	2W-3N	.005	<.2 " " " " " " " " " " " " " " " "
68	2W-5N	.020	<.2 30° NW slope LT. TAN. Brown - Rky Subcrop @ 8"
69	2W-6N	.028-	<.2 20° " " " " " " " " " " " " " " " "
70	2W-7N	.010	<.2 10° " " 1-2% w. Qtz log - M. TAN. ON R. w. EX
71	2W-9N	.026-	<.2 20° slope ch. 7rd. SN, Qtz. frags, B.S. on R. w. 6"
72	2W-10N	.013	<.2 - M. TAN. Loc. ch. 7rd. SN
73	2W-11N	.020-	<.2 10° slope - Flaty log, LT. TAN
74	2W-13N	.013	<.2 5° slope - ch. 7rd. SN - B.S. on R. w. LT. TAN. Brown
75	3W-2S	.004	<.2 5° NW slope M. Red. TAN - GRD. SN Subcrop @ 4"



SKYLINE LABS, INC.

1775 W. Sahuaro Dr. • P.O. Box 50106

Tucson, Arizona 85703

(602) 622-4836

JOB NO. TAJ 482

May 26, 1987

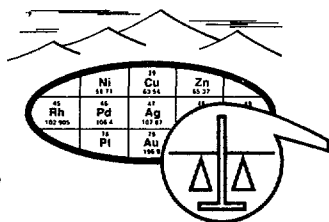
PAGE 4 OF 4

ITEM	SAMPLE NUMBER	Au (ppm)	Ag (ppm)
------	---------------	-------------	-------------

76	3W-1S	.005	< .2 10'W slope, m. Red Br., chert. loc. - 620' SN		
77	3W-0N	.007	< .2 m. Tan Brown, Red Br. @ 8' 1" 1% H., 1% G.		
78	4W-0N	.006	< .2 (DSE) v. Red. TEM stained matrix m. Tan Brown soil		
79	4W-1N	.009	< .2 m. Tan Brown 15'W slope - Loc. 44, Q12 Float		
80	4W-3N	.036	< .2 50'W slope, chert soil 10'W slope valley Bottom. (may be Q12?)		
81	4W-4N	.018	< .2 150'W slope m. Tan Brown - 620' SN loc.		
82	4W-5N	.017	< .2 " " " m. Tan Brown West for 100' 200' W		
83	4W-6N	.030	< .2 100'W slope m. Tan Red Brown GRD SN loc.		
84	4W-8N	.006	< .2 50' slope grad-SN - Biot 20' 41' in 10'.		
85	4W-10N	.006	< .2 50' slope - Chl. (wk) Biot gr-SN loc. - 417'W Brown		
86	4W-11N	.010	< .2 Flat, Chloritic grad-SN loc. m. Tan Brown		
87	6W-9N	.012	< .2 v. Q12 float 12" units - 50' SE slope surface 0' 6'		
88	5.5W-7N	.009	< .2 TERNITE - 620' SN loc. m. Tan Brown		
89	5W-3N	.060	< .2 620' SN - 10' m. Tan Br., 41' Q12 cgl. units		
90	5W-11N	.005	< .2 Sandstone Biot. SN - 41' Q12 cgl. units - 10' m. Tan Br. - 417'W, on Ex		
3.6mm 13' Toy	Dump Rep. 91	OW-15A 25' WY 0W-1S	4.000	1.0	← Sulfur pile on tin. 10' H. Q12 = 60-70%
FINES 4 1/2" sorted	92	OW-15B 6' NW 4 0W-1S (811, 26)	.170	< 2	- Dump. ← + N 50' 20' S 10' AS
6' Hor. cut	93	OW-15C H=5-8% Q=15 clay=50	.170	.2	8' BELOW SURF. - GR-BX - CRACKED. N 20W-10°
10' Hor. cut	94	OW-15D N. well 4 pit	.006	< 2	N 30W 80W streaks in cave 4. Ga.
	95	2W-9N Rock - Subcrop.	.012	< 2	Wh. Q12 float - 4' y. cen chl play partly S. drift 6=3%
	96	1.3W-9N (OLD TAG H2E150)	.034	< 2	← Xenolith (A1?)
15' Run	97	3E-9.5S Rep. sample	.005	< 2	SHARPER peg + GRD - Trench spilt, N 60E S 70E
± 10.2	98	TAIL A) cyclopic	10.000	5.0	5' pit 10' dia. H=5% Q=2 NOT calc. 4 on top
± 1.05	99	TAIL B) mill	1.000	2.4	© 60' 90' 2x2 TAILS: 300' long x 50' wide ± 60' thick
	100	WELL (cyclopic) 210 mesh cuttings 1/2 GPM. 37' deep	.036	< 2	Chloritic GR w/ Loc. G-STAIN + WH. Q12 UNITS I greenish Biot - some matrix xenolith?

*NOTE: Greater than normal geochemical range.
Please advise if fire assay is needed.

cc: ASARCO INCORPORATED
Attn: Mr. J. D. Sell
Ms. Mary Kavanaugh
Southwestern Exploration
Tucson, Arizona



SKYLINE LABS, INC.
1775 W. SahuarO Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 482
May 26, 1987
PROJECT NO.: GBN
SHIPMENT NO. 1
PAGE 1 OF 4

ASARCO INCORPORATED
Attn: Mr. Fleetwood R. Koutz
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

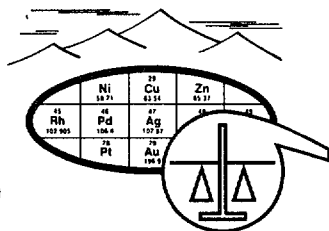
ASARCO Incorporated

MAY 27 1987

SW Exploration

Analysis of 93 Soil and 7 Rock Chip Samples

ITEM	SAMPLE NUMBER	Au (ppm)	Ag (ppm)
1	7E-10S	.028	<.2
2	5E-7S	.007	<.2
3	4E-9.5S	.006	<.2
4	4E-9S	.011	<.2
5	4E-8S	.005	<.2
6	4E-7S	.008	<.2
7	4E-5S	.003	.2
8	4E-3S	.003	.2
9	2.5E-7S	.004	<.2
10	2E-9S	.006	<.2
11	2E-8.2S	.004	<.2
12	2E-7S	.006	<.2
13	2E-6S	.003	<.2
14	2E-4S	.003	<.2
15	2E-3S	.010	<.2
16	2E-2S	.032	<.2
17	2E-16N	.010	<.2
18	1.5E-6.5S	.008	<.2
19	1.5E-9N	.013	<.2
20	1.5E-12N	.006	<.2
21	.6E-7N	.007	<.2
22	.5E-6.5S	.005	<.2
23	1E-5S	.016	<.2
24	1E-3.5S	.006	<.2
25	1E-2S	.013	<.2



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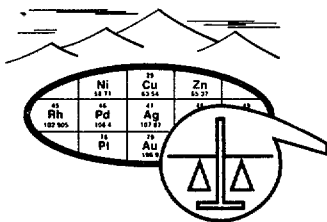
(602) 622-4836

JOB NO. TAJ 482

May 26, 1987

PAGE 2 OF 4

ITEM	SAMPLE NUMBER	Au (ppm)	Ag (ppm)
26	1E-1S	.018	.2
27	1E-0N	.010	<.2
28	1E-3N	.009	<.2
29	1E-5N	.026	.2
30	0W-8S	.016	<.2
31	0W-6.4S	.009	<.2
32	0W-5.5S	.006	<.2
33	0W-4.7S	.007	<.2
34	0W-4S	.008	<.2
35	0W-3S	.007	<.2
36	0W-2S	.003	<.2
37	15A <80	>10.000*	1.4
38	15A 10-80	3.500	.6
39	0W-.75S	.032	<.2
40	0W-0N	.022	<.2
41	0W-2N	.019	<.2
42	0W-4N	.028	<.2
43	0W-6N	.060	<.2
44	0W-7N	.046	<.2
45	0W-10N	.036	<.2
46	0W-13N	.004	<.2
47	0W-14N	.004	<.2
48	0W-16N	.005	<.2
49	0W-17N	.005	<.2
50	0W-18N	.007	<.2



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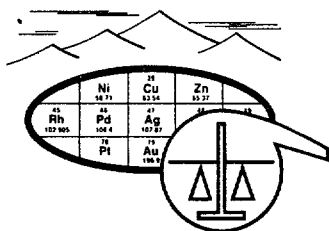
(602) 622-4836

JOB NO. TAJ 482

May 26, 1987

PAGE 3 OF 4

ITEM	SAMPLE NUMBER	Au (ppm)	Ag (ppm)
51	1W-6S	.005	<.2
52	1W-5S	.011	<.2
53	1W-4S	.003	<.2
54	1W-3S	.004	<.2
55	1W-2S	.008	.2
56	1W-1S	.009	<.2
57	1W-0N	.006	<.2
58	1W-1N	.005	<.2
59	1W-12N	<.002	<.2
60	2W-4S	.002	<.2
61	2W-3S	.007	<.2
62	2W-2S	.022	<.2
63	2W-1S	.010	<.2
64	2W-0N	.005	<.2
65	2W-1N	.004	<.2
66	2W-2N	<.002	<.2
67	2W-3N	.005	<.2
68	2W-5N	.020	<.2
69	2W-6N	.028	<.2
70	2W-7N	.010	<.2
71	2W-9N	.026	<.2
72	2W-10N	.013	<.2
73	2W-11N	.020	<.2
74	2W-13N	.013	<.2
75	3W-2S	.004	<.2



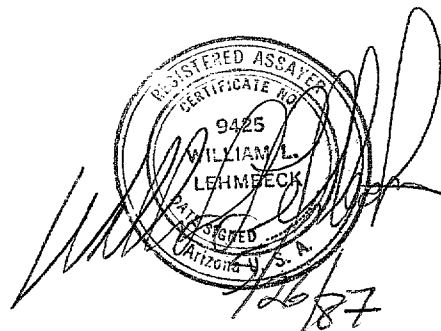
SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

JOB NO. TAJ 482
May 26, 1987
PAGE 4 OF 4

ITEM	SAMPLE NUMBER	Au (ppm)	Ag (ppm)
76	3W-1S	.005	<.2
77	3W-0N	.007	<.2
78	4W-0N	.006	<.2
79	4W-1N	.009	<.2
80	4W-3N	.036	<.2
81	4W-4N	.018	<.2
82	4W-5N	.017	<.2
83	4W-6N	.030	<.2
84	4W-8N	.006	<.2
85	4W-10N	.006	<.2
86	4W-11N	.010	<.2
87	6W-9N	.012	<.2
88	5.5W-7N	.009	<.2
89	5W-3N	.060	<.2
90	5W-11N	.005	<.2
91	0W-15A	4.000	1.0
92	0W-15B	.170	<2.0
93	0W-15C	.170	2.0
94	0W-15D	.006	<2.0
95	2W-9N	.012	<2.0
96	1.3W-9N	.034	<2.0
97	3E-9.5S	.005	<2.0
98	TAIL A	10.000	5.0
99	TAIL B	1.000	2.4
100	WELL	.036	<.2

*NOTE: Greater than normal geochemical range.
Please advise if fire assay is needed.

cc: ASARCO INCORPORATED
Attn: Mr. J. D. Sell
Ms. Mary Kavanaugh
Southwestern Exploration
Tucson, Arizona



ASARCO EXPLORATION RECORD

Solicited submittal
R. Corn - R. Ahern
(J.D. Loghry, promotor)

☒ FIELD EXAMINATION ☐ LITERATURE SEARCH ☐ ASARCO FILE ☐ 59 GB claims (#32-90)

Section I General Indexing

① Name(s) of Property or Area Cyclopic Mine Area (Ex-U.S. Borax Ground SW of Cyclopic Zone)				② Country Mohave Co.		③ State or Province Arizona	
④ USGS Quad. Senator + Garnet Mts.				⑤ File or Core No.			
⑥ Latitude 35°47'N	⑦ Longitude 114°15'W	⑧ AMS Sheet Kingman	Township 28N	Range 19W 18W	Section 24, 25 30, 31	⑨ Examined by F.R. Koutz	⑩ Date 3-5-87
⑪ Office Tucson						⑫ Field Days ±7	

Section II Sources of Information

Date Typed 6-3-87

⑬ References	Author	Date	Title	Publications	Vol. No.
	R. Corn/R. Ahern	1984	Gold Basin Data Package (maps, assays, short report)		
	Myers, T.A. et al	1986	Control Au Min. at Cyclopic Mine	Econ. Geol. v. 81, p. 1553-57	
	Blacet, P.M.	1975	Geol. Map Garnet Mtn. Quad.	USGS OF Map 75-93 1:48,000	

Section III Appraisal

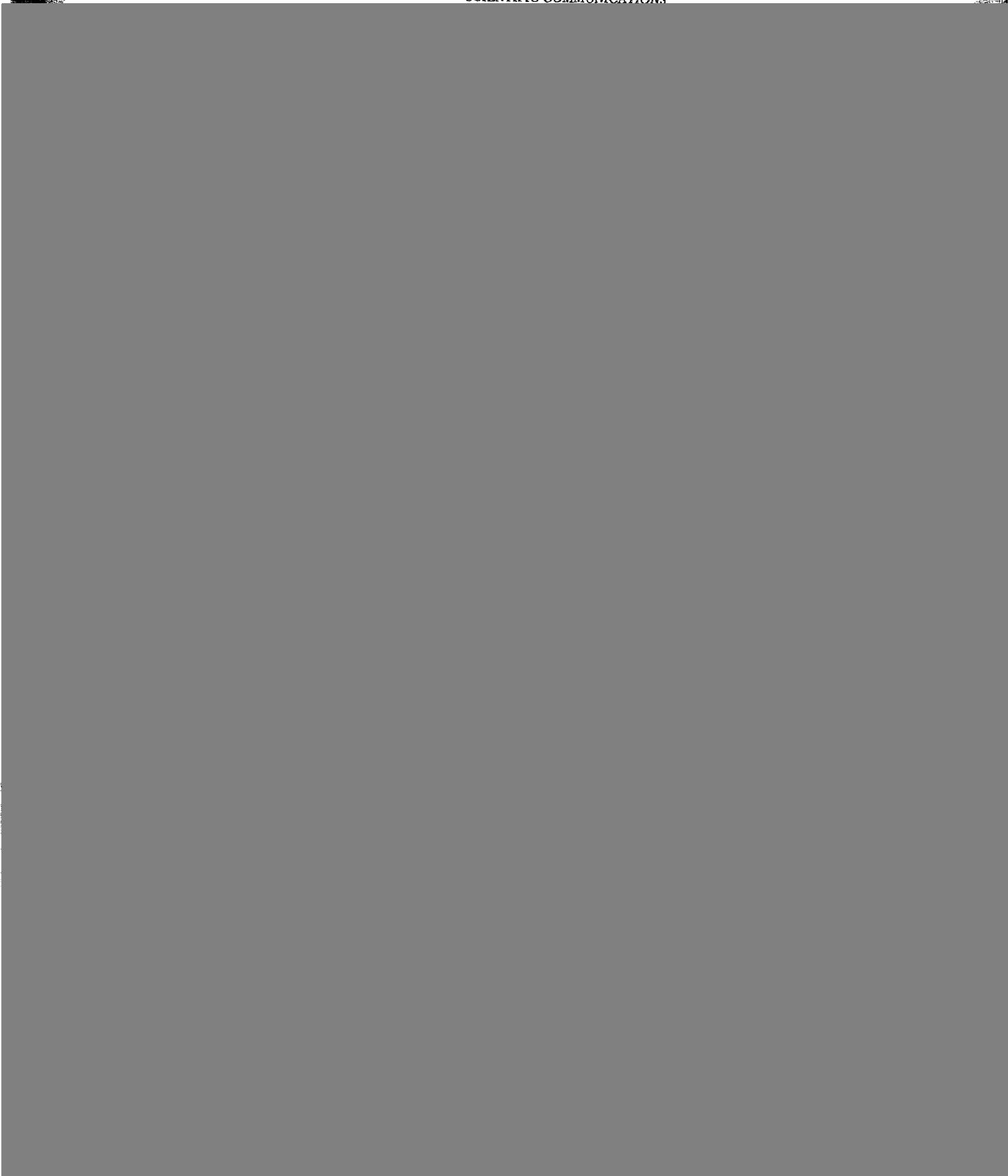
⑭ Recommendations <input type="checkbox"/> Action Now <input checked="" type="checkbox"/> Too Low Grade <input checked="" type="checkbox"/> Too Small <input type="checkbox"/> Ownership Problem <input type="checkbox"/> Access Problem <input checked="" type="checkbox"/> High w/o		⑮ Post Producer <input checked="" type="checkbox"/> Producer <input type="checkbox"/> Mineral Deposit <input checked="" type="checkbox"/> Prospect		Stacked listric <input type="checkbox"/> low angle Faults <input checked="" type="checkbox"/> Geologic Concept <input type="checkbox"/> Geochem Anomaly <input type="checkbox"/> Geophy Anomaly <input checked="" type="checkbox"/> Cyclopic Ext		⑯ Production Commodity Au (Red Cloud) ±500? ±.3 opt Au Cyclopic-Fry 60,000 0.35 opt Au	
⑰ Num. Drill Holes 16* Approx Total Footage 5645*		⑱ Excavations Numerous-shallow ¼ mi. of O.P. on Cyclopic		⑲ Reserves See AZ Dept Min. Res. Files-Phx ① Measured ② Estimated - Potential 1 Au (GB clms)* 1/3-2 m.t. .02-.04 opt 2 prob. (poss) 300,000 (5m.t.) .15(.05) incl 3 Cyclopic 67,000T .28 opt Au			
<input type="checkbox"/> Spectro. Analysis Attached		<input checked="" type="checkbox"/> Assays Attached 90 soil 10 rock		<input type="checkbox"/> Geochem Results Attached U.S. Borax Data			

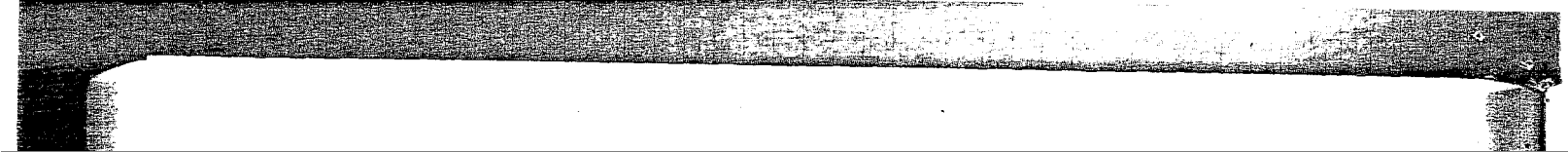
Section IV Geologic Data

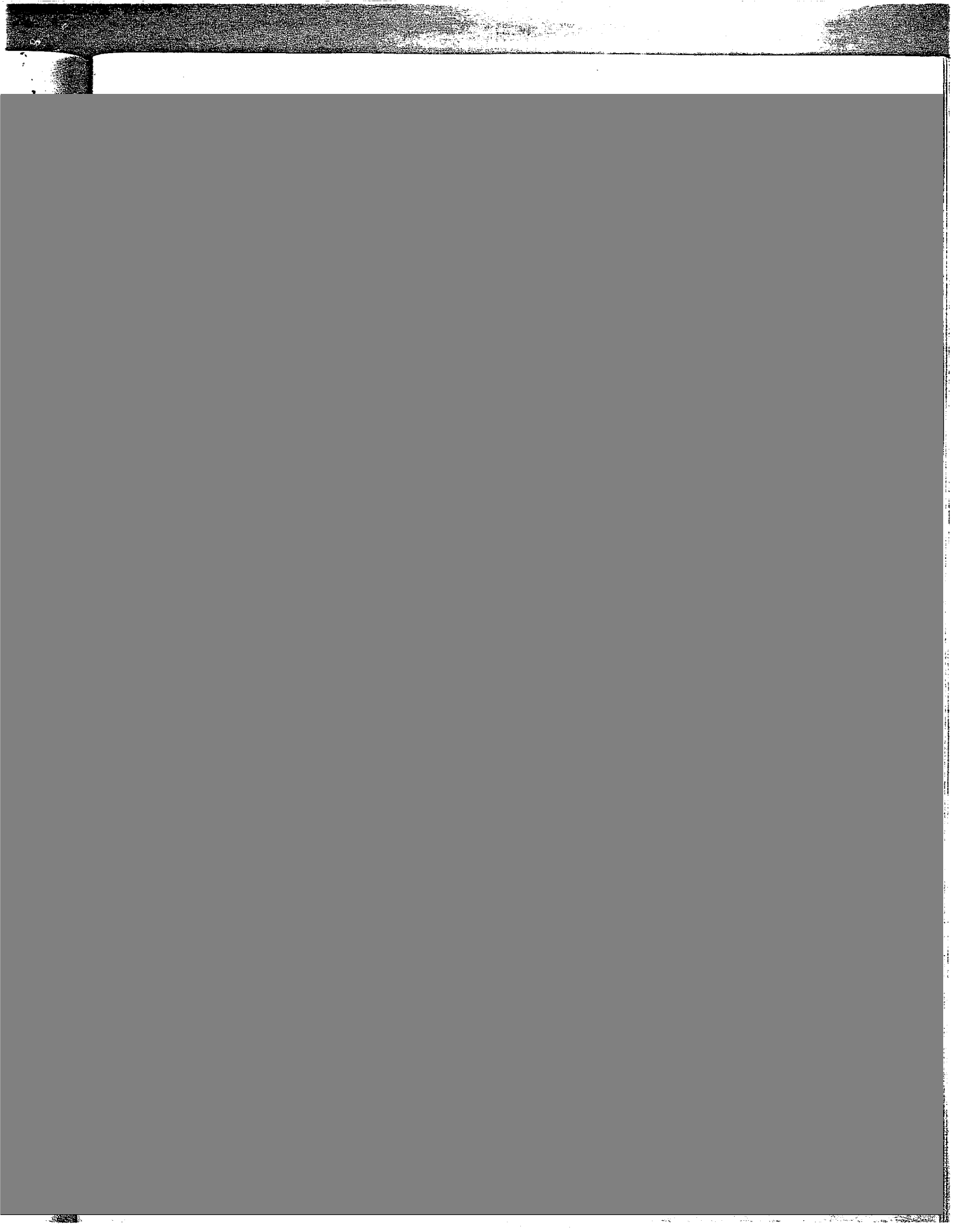
TAJ-482

10 elements

⑳ Commodity or Contained Metals Au (anom: Pb, Cu, Zn, Mo, Ag, F, Ba, Hg, W)	
㉑ Ore Minerals-Major Au (pyrite-now hem-goeth) Minor T cpy- CuCO ₃	
㉒ Host Rocks-Major Gr-Grd gneiss 2mica-Gran. Fanglomerate Minor Tuff (in fanglomerate)	
㉓ Age of Host Rocks 1.6-1.7 by 72 m.y. Mid-Miocene Mid-Miocene	
㉔ Nature of Exposures Fair: Rolling, weathered Grussy hills, 500' relief, 4600' elev.	
Thin Qal in valleys. Local thick soil development (mostly eolian silts).	
㉕ Alteration Silica-sericite flooding in breccia/structure. Wk to mod. chl (± epid-Kfs-calc) after mafics. Siderite-calcite microveinlets. Local clay Total Extent 4+mi. NW ½ mi. wide (sampled 3000' N-S x 800' E-W)	
㉖ Structure Stacked listric-detach. faults w/higher angle antithetic offsets & feeders. NW strike, some NE cross structure. NW-synformal warp localizes Cyclopic-enhances enrichment/placer.	
㉗ Ore Occurrence Au with pyrite (hem-goeth) in brecciated milky Qtz-jasperoid. High angle feeder zones better mineralized than low angle zones. Prob. only shallow synformal zones with enrichment have hope of future production.	
㉘ Age of Mineralization M-Tert (maybe remobilized Cretaceous?)	
㉙ Conclusions & Recommendations Sampled area W/2 Sec. 24, T28N, R19W is only area on Loghry property that has not been at least initially tested by drilling or extensive sampling. Item 18 RDH limit potential to Item 17-1 Reserves. Although a number of +1ppm Au & other elemental anom. occur over drilled zone these die with depth. Only 25' of 5645' RDH was >1ppm & 125' >.3ppm. FRK soil sample results show area 700' N x 350' NW with 15 values 27ppb av. (7-60ppb) assoc. with siderite veinlets. This is not good enough for further work. Fry-Cyclopic area on Saratoga Mines ground & partially drilled (Item 17-2&3 above). Data should be obtained for the (For additional space use extra sheets)	







ASARCO

Gold Basin Area

Exploration Department

July 24, 1987

R. L. Brown
Vice President

Mr. F. Koutz
Tucson Office

Dear Mr. Koutz:

I note that Bill Kurtz has been beating on you vigorously, and justifiably so, for spending too much time for writing a report on an area which has turned out to be of little interest to us.

Let me, however, now place a garland (but please recall that a garland is far from a halo) on your bloodied brow and say that I thought that your June report on Esmerelda County was precisely to the point.

I would gather that the area you visited along Mt. Jackson Ridge in the Cuprite district, south of Goldfield, is of some interest. The obvious question is who are the claim owners and do you think we can make a deal with them if sample results and geological mapping indicates that such would be worthwhile action.

Yours very truly,



R. L. Brown

RLB:mr

cc: W. L. Kurtz
J. D. Sell
P. G. Vikre

ASARCO Incorporated

JUL 27 1987

SW Exploration

July 9, 1987

F.R. Koutz
Tucson Office

Report Writing

Attached is a WLK version of your June 1, 1987 memo "Corn-Ahern-Loghry Claims, Gold Basin Area, Mohave County, Arizona" to J.D. Sell. I believe some variant of this version would be more appreciated in New York.

WLK:mek
Att.


W. L. Kurtz

cc: J.D. Sell
R.L. Brown

July 9, 1987

To: J.D. Sell

From: F.R. Koutz

Corn-Ahern-Loghry Claims
Gold Basin Area
Mohave County, Arizona

X field days and X office days were spent studying the Gold Basin Area and the Corn-Ahern data. Gold occurs in narrow quartz veins near the contacts of late Cretaceous two-mica granites into Precambrian granites and granitic to granodioritic gneisses. Most of this mineralization is in moderate to high-angle structures with limited production (a few 1000T maximum), only minor stockwork-dissemination and thus minimal potential for a bulk tonnage deposit. Gold also occurs associated with a series of Mid-Late Tertiary stacked, listric fault-breccia (detachment) zones that extend for 6-8 miles NW through the north central White Hills and offer some bulk tonnage possibilities. This multistage mineralization took place during low-angle faulting and is probably related to Tertiary intrusives in the area (new Au mineralization and/or remobilization of earlier mineralization). Total district production amounts to about (either tons grade or total ounces gold).

An untested area, mostly soil covered, that could contain a modest sized deposit was recognized and was grid soil sampled. Results were disappointing and do not indicate a drill target of sufficient size at shallow depths. Though no drill targets are presently recognized in the Gold Basin Area, the widespread occurrence of spotty gold makes the district a candidate for future study but low priority.

Attached are a more detailed description of the mineralization, a history of previous work, and maps. The Corn-Ahern data package will be added to our files.

ASARCO EXPLORATION RECORD

Solicited submittal
R. Corn - R. Ahern
(J.D. Loghry, promotor)

IDS

☒ FIELD EXAMINATION ☐ LITERATURE SEARCH ☐ ASARCO FILE ☐ 59 GB claims (#32-90)

Section I General Indexing

① Name(s) of Property or Area Cyclopic Mine Area (Ex-U.S. Borax Ground SW of Cyclopic Zone)					② Country Mohave Co.		③ State or Province Arizona	
④ USGS Quad. Senator + Garnet Mts.					⑤ File or Gorse No.			
⑥ Latitude 35°47'N	⑦ Longitude 114°15'W	⑧ AMS Sheet Kingman	Township 28N	Range 19W 18W	Section 24, 25 30, 31	⑨ Examined by F.R. Koutz		⑩ Date 3-5-87
⑪ Office Tucson					⑫ Field Days ±7			

Section II Sources of Information

Date Typed 6-3-87

⑬ References	Author	Date	Title	Publications	Vol. No.
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	Myers, T.A. et al	1986	Control Au Min. at Cyclopic Mine	Econ.Geol. v.81,p.1553-57	
	Blacet, P.M.	1975	Geol.Map Garnet Mtn. Quad.	USGS OF Map 75-93 1:48,000	

Section III Appraisal

⑭ Recommendations		⑮ Stacked listric		⑯ Production	
<input type="checkbox"/> Action Now	<input checked="" type="checkbox"/> Post Producer	<input type="checkbox"/> low-angle Faults	Commodity	Tons	Grade
<input checked="" type="checkbox"/> Too Low Grade	<input type="checkbox"/> Producer	<input checked="" type="checkbox"/> Geologic Concept	Au (Red Cloud)	±500?	±.3 opt Au
<input checked="" type="checkbox"/> Too Small	<input type="checkbox"/> Mineral Deposit	<input type="checkbox"/> Geochem Anomaly	Cyclopic-Fry	60,000	0.35 opt Au
<input type="checkbox"/> Ownership Problem	<input checked="" type="checkbox"/> Prospect	<input type="checkbox"/> Geophy Anomaly	⑰ Reserves See AZ Dept Min.Res.Files-Phx		
<input type="checkbox"/> Access Problem	<input type="checkbox"/>	<input checked="" type="checkbox"/> Cyclopic Ext	⑱ Measured <input type="checkbox"/> Estimated - Potential		
<input checked="" type="checkbox"/> High w/o			Commodity	Tons	Grade
⑲ Num. Drill Holes 16*		⑳ Excavations Numerous-shallow		1 Au (GB clms)* 1/3-2 m.t. .02-.04 opt	
Approx Total Footage 5645*		1/4 mi. of O.P. on Cyclopic		2 prob. (poss) 300,000 (5m.t.) .15 (.05) incl	
				3 Cyclopic 67,000T .28 opt Au	
<input type="checkbox"/> Spectro. Analysis Attached		<input checked="" type="checkbox"/> Assays Attached 90 soil 10 rock		<input checked="" type="checkbox"/> Geochem Results Attached U.S. Borax Data	

Section IV Geologic Data

TAJ-482

10 elements

⑳ Commodity or Contained Metals		Au (anom: Pb, Cu, Zn, Mo, Ag, F, Ba, Hg, W)	
㉑ Ore Minerals-Major		Au (pyrite-now hem-goeth) Minor T cpy- CuCO ₃	
㉒ Host Rocks-Major		Gr-Grd gneiss 2mica-Gran. Fanglomerate Minor Tuff (in fanglomerate)	
㉓ Age of Host Rocks		1.6-1.7 by 72 m.y. Mid-Miocene Mid-Miocene	
㉔ Nature of Exposures Fair: Rolling, weathered Grussy hills, 500' relief, 4600' elev.			
Thin Qal in valleys. Local thick soil development (mostly eolian silts).			
㉕ Alteration Silica-sericite flooding in breccia/structure. Wk to mod. chl (± epid-Kfs-calc) after mafics. Siderite-calcite microvnlts. Local clay ㉖ Total Extent 4 mi. NW 1/2 mi. wide (sampled 3000' N-S x 800' E-W)			
㉗ Structure Stacked listric-detach. faults w/higher angle antithetic offsets & feeders. NW strike, some NE cross structure. NW-synformal warp localizes Cyclopic-enhances enrichment/placer.			
㉘ Ore Occurrence Au with pyrite (hem-goeth) in brecciated milky Qtz-jasperoid. High angle feeder zones better mineralized than low angle zones. Prob. only shallow synformal zones with enrichment have hope of future production. ㉙ Age of Mineralization M-Tert (maybe remobilized Cretaceous?)			
㉚ Conclusions & Recommendations Sampled area W/2 Sec. 24, T28N, R19W is only area on Loghry property that has not been at least initially tested by drilling or extensive sampling. Item 18 RDH limit potential to Item 17-1 Reserves. Although a number of +1ppm Au & other elemental anom. occur over drilled zone these die with depth. Only 25' of 5645' RDH was >1ppm & 125' >.3ppm. FRK soil sample results show area 700' NEX350' NW with 15 values 27ppb av. (7-60ppb) assoc. with siderite veinlets. This is not good enough for further work. Fry-Cyclopic area on Saratoga Mines ground & partially drilled (Item 17-2&3 above). Data should be obtained for the (For additional space use extra sheets) record.			