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AMERICAN SMELTING AND REFINING COMPANY  
Tucson Arizona

September 2, 1964

MEMORANDUM FOR W. E. SAEGART

Geologic Reconnaissance  
Southern Pinaleno Mountains  
Cochise-Graham Counties, Arizona

During the latter part of July and the first week in August, a general reconnaissance for alteration zones was made in the Greasewood Mountain District and the Circle I Hills north of Willcox, Arizona. Most of the time was spent along the eastern edge of the Sulphur Springs Valley looking for clues to alteration zones which might extend under valley alluvium. Two days were spent in alteration areas already known to the Company. Except for a possible buried alteration zone near the Spike-E Hills four miles north of Willcox (Beck, 1964), no exploration targets were found.

Within the Greasewood Mountain District the country rock consists of Precambrian granite, Cretaceous and Tertiary andesitic volcanics, Tertiary rhyolitic volcanics and numerous rhyolitic porphyry dikes of probable Tertiary age (Cooper, 1960). No attempt was made to map the geology of the region except in areas directly involved with alteration and or mineralization. Within this district there are three alteration zones: (1) the Greasewood or Golondrina prospect, (2) the Red Mountain prospect, and (3) the O-Bar-O Ranch area.

A. G. Blucher (1959) visited the Greasewood or Golondrina Claims, which are located one mile east of Greasewood Mountain, and noted two weakly altered and mineralized zones, neither of which had possibilities as a porphyry deposit. Blucher further stated that the northern zone of alteration, which I did not visit, had mainly pyrite as its mineralization with the alteration in a discontinuous patchwork along a general E-W trend. The southern alteration zone, which I did visit, consists of Precambrian granite surrounded by both Cretaceous-Tertiary volcanics and post-mineral(?) rhyolitic volcanics of Tertiary age. Several outcrops of breccia were found which I felt were fault breccias due to the probable thrust faulting in the area. Very weak clay alteration and some limonite after pyrite was found along these fault breccias. With the slight hope that the mineralization in the Precambrian granite might improve under the overlying post-mineral(?) volcanics, nine rock chip samples were taken along the contact of these two rock types near the northwest edge of the alteration zone and run for copper and moly. Except for two samples taken near old prospects which had copper staining on their dumps, the copper and molybdenum values averaged 10 p.p.m. and 2 p.p.m. respectively. The low copper and moly values are regarded as background. Due to the lack of pervasive and intense alteration, no favorable limonites, and near impossibility of the alteration improving under the post-mineral(?) Tertiary volcanics to the northwest, I recommend no further interest in this area.

The Red Mountain area is located one mile due west of Greasewood Mountain in a granitic valley surrounded by hills of Cretaceous and Tertiary volcanics. This area has been seen by many ASARCO geologists through the years. It consists of a weakly altered Precambrian granite and Precambrian(?) quartz porphyry overlain by Tertiary-Cretaceous volcanics which are themselves weakly altered, especially near rhyolitic quartz porphyry dikes. These dikes, which cut all the rocks in the district, are in part silicified and seem to be related to the weak mineralization found in the area. The exact relationship was not determined, but their common association with what mineralization there was and the alteration of both the volcanics and igneous intrusive, suggest a common origin. The mineralization, which consisted mainly of limonite after pyrite, was strongest in fracture zones near the dikes and extended only a short distance into the surrounding volcanics and granite. Eight rock chip samples were taken and run for copper and moly. The copper values averaged 25 p.p.m. and the molybdenum 5 p.p.m. with one sample running 140 p.p.m. moly. The area was again rejected as a possible porphyry deposit, as it had been by previous ASARCO geologists, because of the weak, spotty clay alteration and near complete lack of any evidence of copper mineralization. No chance was seen for pervasive alteration to exist under the post-mineral(?) Tertiary volcanics to the east (see attached map).

The third zone of weak alteration is located near the O-Bar-O Ranch three miles west of Greasewood Mountain. Here were found many discontinuous patches of weak to moderate alteration in the Tertiary-Cretaceous volcanics, again generally associated with N70°E trending rhyolitic porphyry dikes. The volcanics are andesitic to rhyolitic in composition and are generally porphyritic in texture. The Precambrian granite found north and west of the O-Bar-O Ranch is fresh with no signs of mineralization. Some weak copper staining was found in a few places along the rhyolitic dikes, but there are no areas of pervasive and intense alteration in the area. Some limonite after pyrite was found along fractures and contacts. Although the alteration probably extends under cover to the southwest (see attached map), there seems little chance for a porphyry copper environment. Rock chip samples were taken along the edges of outcrops in this area also with copper running 35 p.p.m. and molybdenum 3 p.p.m.

The Circle I Hills are eight miles north of Willcox and south of the Pinaleno Mountains. The country rock includes Precambrian metasediments, Laramide granite and Tertiary volcanics. The volcanics, which consist generally of a reddish rhyolitic porphyry rock, are probably post-mineral in age and overlie the older rocks in places. The only mineralization was found in the Precambrian quartzite and other metasediments. This consisted of small pyrite veins filling fractures and some copper staining. All the rocks are generally quite fresh with no sign of favorable alteration or mineralization.

The Spike-E Hills south of the Circle I Hills and three miles north of Willcox are made up of quartzite which Cooper (1960) feels are Precambrian in age. The hills are fresh except for some sericitization associated with specular hematite, which was found throughout the quartzite. A mineralized churn hole was found 500 feet northwest of these hills. The details of this discovery are covered in a separate memo to W. E. Saegart (Beck, 1964).

Due to the complete lack of pervasive alteration and/or favorable limonites and the negative results in looking for clues leading to possible buried alteration zones, I recommend no further Company interest in this district with the exception of the area around the Spike-E Hills.

DAVID B. BECK

DBB/jk

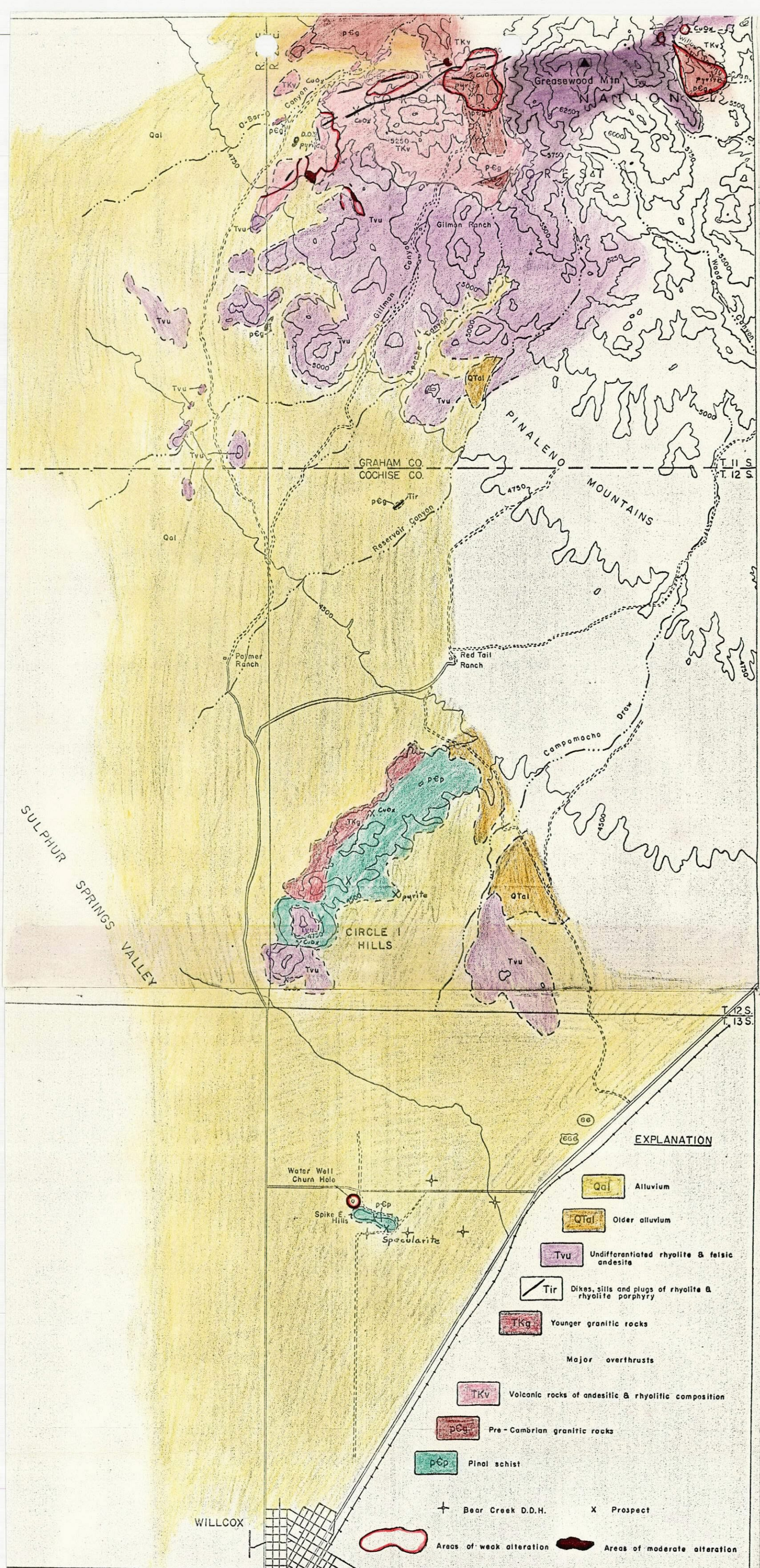
References

Cooper, J. R. 1960, Reconnaissance Map of the Willcox, Fisher Hills, Cochise and Dos Cabezas Quadrangles, Cochise and Graham Counties, Arizona; U.S. Geol. Survey Mineral Investigations Field Studies Map MF-231.

Blucher, A. G. 1959, Greasewood Prospect, Pinaleno Mountains, Graham County, Arizona.

Beck, D. B. 1964, Bear Creek Drilling, Teviston Mining District, Cochise County, Arizona.





# RECONNAISSANCE MAP

## PINALENO MOUNTAINS & CIRCLE I HILLS

Graham and Cochise Counties, Arizona

Geology after J.R. Cooper, M.T. Fields

Study Map MF-231

SCALE: 1"= 1mile

Aug. 15, 1964

D.B. Beck



AMERICAN SMELTING AND REFINING COMPANY  
Tucson Arizona

September 10, 1959

J. H. C.

DEC 4 1959

MEMORANDUM FOR KENYON RICHARD

GREASEWOOD PROSPECT  
Pinaleno Mountains  
Graham County, Arizona

On June 24th and 25th a reconnaissance was made of the southern Pinaleno Mts. about 25 miles south of Safford, Arizona. In the north central part of this area (see attached sketch) are the Greasewood Claims which are held by the same group of promoters who offered us the Day prospect. These people are represented by Ruskin Lines of Safford.

The country rock includes Cretaceous and Tertiary andesitic volcanics, Tertiary rhyolitic volcanics, and Precambrian granite. The geology shown on the sketch is taken from the Arizona Bureau of Mines Geologic Map of Graham and Greenlee Counties and is much simplified. Not shown are numerous rhyolite dikes, and dikes and sills (?) of andesite porphyry. A Conglomerate resembling the Silver Bell formation occurs in the area but during this reconnaissance no good exposures of its contacts were observed. The rhyolitic volcanics appear to be part of the upper volcanic sequence considered in this area to be post-mineral.

There are two altered and mineralized zones within the Greasewood claims. Neither zone is pervasively altered but rather is a discontinuous patchwork of moderate alteration. There are several outcrops of breccia in the southernmost zone but nothing resembling a mineralized breccia pipe.

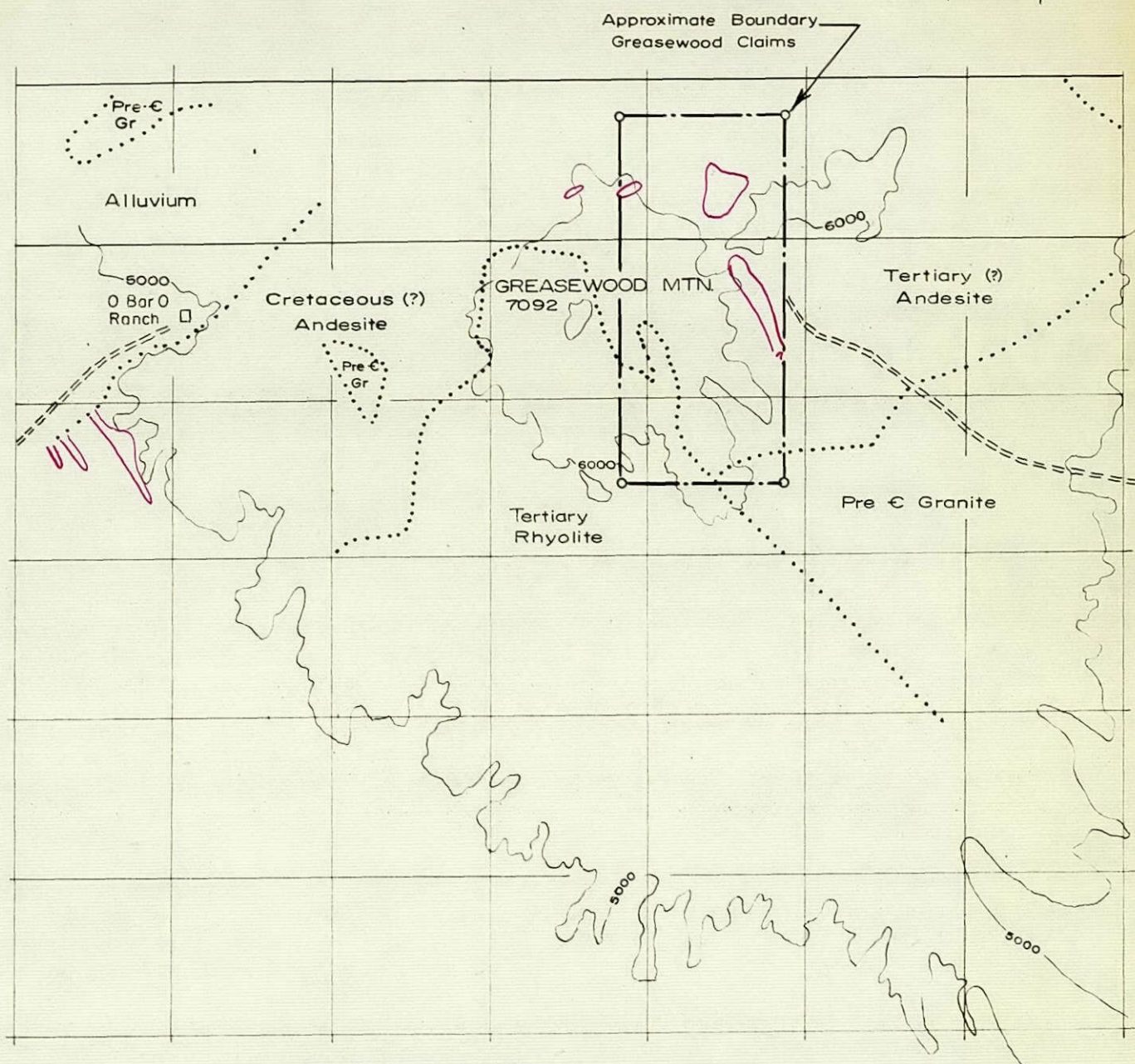
In the northernmost zone the moderately altered patches trend E-W across Cottonwood creek and on one of these patches there is an old prospect shaft. The shaft is inaccessible as there is a windmill over it, but remnants of the dump in the creek show that some chalcopyrite was encountered. Sulphides can be found at the surface in a few places and appear to be only pyrite.

Although weak copper staining can be found at a few places within these claims, there is no area of pervasive and intense alteration, no favorable limonites, and no intense alteration extending beneath cover. I recommend no further Company interest.

Only the northern and northwestern part of the area shown on the sketch was covered during this reconnaissance. On the northwestern edge three small weakly altered zones extend northward under the alluvium. These are not sufficiently large to be of interest in themselves but suggest that the eastern edge of the Sulphur Springs Valley alluvium deserves additional reconnaissance.

ARTHUR C. BLOCHER

ACB/ds  
Attachment



TO ACCOMPANY Memo.....  
DATED Sept. 10, 1959  
BY A.G. Blucher



Areas of Weak to Moderate  
Alteration

Reconnaissance Sketch  
PINALENO MOUNTAINS  
GRAHAM COUNTY, ARIZONA  
Geology after Arizona Bureau of Mines

Scale 1" = 1 mile

June 29, 1959

A.G.B.