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The following was taken from the files of the Arizona Pioneer Historical Society Museum, Tucson, Arizona.

ARIZONA WEEKLY ENTERPRISE

Published every Saturday at Florence, Pinal County, Arizona, A. T.

Editor and Proprietor--Thomas F. Weedin

July 29, 1882

"JESSE BENTON CONSOLIDATED"

A Trip To The Company Mines And Mill.

In company with Messr's P. R. Brady, J. D. Walker and Isaac D. Smith, the editor of the Enterprise visited the Owl Heads Mining District last week and for three days enjoyed the splendid hospitality of Superintendent W. H. Merritt of the Jesse Benton Consolidated. As a matter of course, our natural inquisitiveness, developed and enlarged by years of reportorial work led us to a n investigation of the mines of the camp and other matters we fancied would be of interest to the fifty million readers of the Enterprise.

Topographically

The Owl Heads District is dissimilar to any we ever saw. It lies on a slightly undulating mesa, trending north from the base of the Tortolita Mountains and we experienced no difficulty in driving over any portion of the claims in a two horse wagon. The general formation is granite and prophyry, and ledges, or at least a majority of them run east and west parallel with the Tortolita range, and though cropping but slightly are clearly defined and easily traced. They pitch south toward the mountains at an angle of from thrity to fifty degrees and are broken somewhat by dikes that have been interjected at different periods, but straighten up as they go down. The mountains lying to the south are slate lying on granite base and show no mineral except a few traces of copper. The district takes it's name from five small buttes which mark the western boundary. To the unpoetic observer, they resemble only the inumerable and fantastically fashioned columns of stone with which nature has embellished the foothills and the mountains of Arizona. But the fanciful aborigines saw in them a resemblance to the head of the lord of Wisdom,

and hence gave them the name Chew-Toot-A-Maw (Owl Heads.) The first mine we explored was the

JESSE BENTON

We entered an encline shaft which had been driven down on the prophyry foot wall near the west end of the claim. We proceeded to a depth of fifty feet, noting as we decended an eight inch streak of free milling chloride ore lying on the foot wall. Fifty feet from the surface, we entered a level driven west on the foot wall to distance of forty feet showing all the way the pay streak we had observed in coming down the shaft. At some points in this drift the pay streak widens out to ten or twelve inches. Retracing our steps to the face of the level, we entered another one directly opposite and extending east sixty feet. Here we found the same pay streak showing the entire length of the drift, except at one point where the dike had forced it out. Returning to the face of the drift we decended the shaft to the bottom, a distance of 75 feet from the surface and found a continuation of the pay ore. The hanging wall is granite and the width of the vein matter is several feet. Returning from this point to the surface, we examined the dump and found about 40 tons of ore, the mill average of which is three hundred dollars per ton. Just east of this shaft is an open cut extending along the ledge. It is 20 feet long, six feet wide and 12 feet deep and has yielded about 30 ton of ore as good in grade and the same in character as that on the dump at the shaft. Just west of the shaft is an open cut on the ledge 95 feet long, 12 feet deep and about 4 feet wide. From this a large quantity of rich chloride ore has been extracted. Near the center of the claim is an enclined shaft running down on the foot wall to a depth of about 70 feet and cross cut at a depth of about 60 feet. It shows a greater breadth of vein matter than the west shaft and the ore occurs in bunches scattered through the vein. Some of the ore from the shaft has been shipped but a considerable amount of high grade rock remains on the dump. On the east end of the claim another encline shaft goes down on the foot wall to a depth of eighty feet, but we did not explore it owing to a lack of time. It shows some fine

ore on the dump, but most of the metal taken out at this point has been shipped and sold for something over $300.00 per ton. Besides the developments mentioned there are numerous open cuts along the surface of the ledge and all show ore. The next best property belonging to the company, so far as could be judged by the meagre developments is

THE DESERT

Lying about three miles west of the Benton. Here we found an enclined shaft 25 feet deep, passing down between the walls and showing a pay streak from two to two and a half feet wide. Like those of the Benton the walls are porphyry and granite. The dump shows about 40 tons of high grade ore. The ledge has been cut into at several points and shows good mineral in each opening. From this claim we drove to the

EAGLE

A property lying about half way between the Benton and the Desert and owned by the same company. It is a gold Lead in granite, and has been prospected to a depth of 22 feet by an enclined shaft in which there is a 12 inch pay streak assaying one hundred dollars in gold to the ton and carrying some silver. There are 12 tons of ore on the dump. The company own several other properties but we did not have time to examine them, Leaving the Benton group we visited

THE MILL

The Jesse Benton Mill stands in a canyon at the base of the Tortolitas and about three and a half miles west of theJesse Benton Mine. A splendid hard road of gradual decent leads from the latter to the mill. The mill site could not have been better adapted to the purpose had it been designed especially for that use. It is located on a solid rock bluff which has been blasted down in the form of terraces and the machinery so arranged that the ore works down from the rock crusher to the settler without being handled more than once. The machinery consists of five 700 pound stamps, two five foot pans, one eight foot settler, one three foot clean-up pan, a rock crusher, a thrity horse power engine, a large steam pump with boiler capacity to furnish more steam than will be needed. The machinery was all made at

Becket & McDowells, New York, andis handsomely finished. The mill will be completed by the 15th of next month and ready for business. It is well constructed and arranged in every particular, and we believe that we may safely pronounce it the most complete and perfect five stamp mill in Arizona. We may also add that owing to Supt. Merritt's economical wise management, the mill has cost less than any like institution we know of. The water question, which at one time was a doubtful one, has been settled. A well, sunk about sixty feet south of the mill tapped a remarkably strong vein of water at a depth of 25 feet. The water stands ten feet deep in the well and cannot be lowered by the force pump. But as an extra precaution the water from the mill will be saved and used over. The loss will be about 33 1/3 percent. All the flats surrounding the mill are covered with a good growth of mesquite and palo verde timber and will furnish an abundant supply of wood.

At the present mine developments in Arizna has hardly commenced, yet her dividends have turned the drift of capital this way. Every new bullion producer adds momentum to it and a few years hence the volume of capital seeking investment here will be so great as to create a demand for every grade of mining property. Those who have the courage and patience to stand by their properties are certain to see fruition of their hopes. Mining now is not the wild gambling business it was in the palmy days of the Comstocks, but has settled down to a regular legitimate industry and men engaged in it cannot rise from poverty to affluence within a week, as they did during that speculative period. But it is a certain road to wealth, now as then, only it requires more time, more patience and more labor to reach their goal.

The following was taken from the files of the Arizona Pioneer Historical Society Museum, Tucson, Arizona.

ARIZONA BLADE TRIBUNE

Florence, Arizona Saturday, May 5, 1923

"RICH GOLD STRIKE MADE IN OWL HEADS---$2000 TON"

Rich Gold strikes seem to be the rule these days and within the last few weeks two big strikes have been made in Pinal County. First came the news of the big strike in the Greenback property south of Casa Grande, where ore running as high as $300 per ton in gold was made. Now comes Roy Guild to Florence with news that he has found ore in an old works near the old Jesse Benton silver property in the Owl Heads district that assays 73 ounces gold and 512 ounces silver, or within six dollars of $2000 to the ton.

The Owl Heads District is highly mineralized there being three distinct mineral zones in the district, gold, silver and copper. Back in the years from 1882 to 1892 there was much activity in the district. The Jesse Benton silver property was being worked night and day with a large crew of miners, and it is reported that between 1,000,000 and 1,500,000 ounces of silver was taken out of the mine. The ore was freighted some five miles further down the gulch to the west where it was put through a five stamp mill and the silver milled. Then there was a village of some 300 souls at the mine and it was truly a lively mining camp, and there are tales of 'high-grading' that put to shame some of the wildest tales of the palmiest days of California mines. Shipments of ore to Denver are recorded that went as high as eighty percent silver and it was worth a dollar an ounce.

In those days quicksilver was used to save the silver and, as the story goes, at times when the quantity of quicksilver ran low the miners were put to work on a gold ledge nearby. But it was found to be impractical to try to mill gold ore in a silver mill, so nothing much was done toward development of the gold property. Along about 1892 the promoters of the Jesse Benton became interested in the Vekol, out south of Casa Grande,

that was found to be much richer than the Jesse Benton, and the camp was moved to the Vekol, which produced a million or two. Then came a close down of the silver mining followed by litigation, and work in the Owl Heads was suspended entirely. For a number of years the Zekendorfs of Tucson kept up the assessment work on the properties, but finally abandoned it. Later William Clark of Florence filed on the property, and he had an arrangement with the late Col. Thomas F. Weedin who did a great deal of development work on what became known as the Silver Hoard Group of claims. When Mr. Clark was no longer able to keep up the work, the Guild Brothers, Roy and Nott took hold of the property and kept up the assessmentwork, and have done a great deal of development work, especially on the Silver Group where a large tonnage of silver ore running an average of $24.00 per ton is now piled up on the dump. Samples are to be had running very high. Last year a bonding lease was given on the property but owing to some dispute the work was closed down the first of this year. It was then that Roy Guild, who is actively in charge of the property, began work on the gold ledge which is known as the Golden Eagle, about a mile and a half to the west and down in the lower lands. With the assistance of one man he cleared out the old shaft and found considerable water in the bottom. He then cleared out spots in the old surface cut which had been pretty well filled up in the more than thirty years of idleness with soil washed down by the heavy rains that abound in that region during the rainy periods. Mr. Guild then selected a spot further east than had been before worked where he sunk a hole and encountered the ledge quite near the surface. A couple of shots were put in to take off the top capping and many samples of free gold were found. Mr. Guild made several tests for gold and found the ore to be very rich. Samples were taken to the University of Arizona where assays were made by Mr. Jacobson. Thesamples were those not showing free gold and the assays developed that a rich find had been made, the ore running 73 ounces of gold and 512 ounces of silver, or within six dollars of $2000.00 per ton.

The ore is pronounced Tulleride and is strongly impregnated with horn silver. The richest specimens of ore is very dark quartzite, very similar to that found in Colorado. The pay streak is about 12 to 14 inches wide at the top and lays between a silver diabase and a granite hanging wall on a forty-five percent incline, dipping to the south, the ledge running east and west. At the present writing the ledge has not been traced far enough to determine it's lenght, and nothing has been done to give any idea of it's depth.

All the ground in that section has been taken up in years gone by and is now held under filings, so there is no need for a rush in that direction with the hope of getting a location on the pay dirt.

The Guild brothers have not fully determined what their next step will be, but that they will take action to develop the property is quite certain. The location is easily assessable from either the east or west. It is about 15 miles east of the Southern Pacific Railroad and in comparatively flat country.

Should this property prove up by carrying the high values with depth, another Goldfield or Comstock is not beyond possibility, in fact, it now seems to be entirely reasonable that before another year rolls around, the Owl Heads mining district will be the scene of more genuinely substantial activity than in any other mining section in Arizona, for here, gold, silver and copper may be mined with almost equal success, and unlike most rich territory, here water is to be found at a shallow depth in sufficient quantity for mining purposes and domestic use.

Mr. Nott Guild has a few samples at the Post Office that he will be glad to show anyone disiring to see tham and there are also a few samples at the office of the Blade Tribune.

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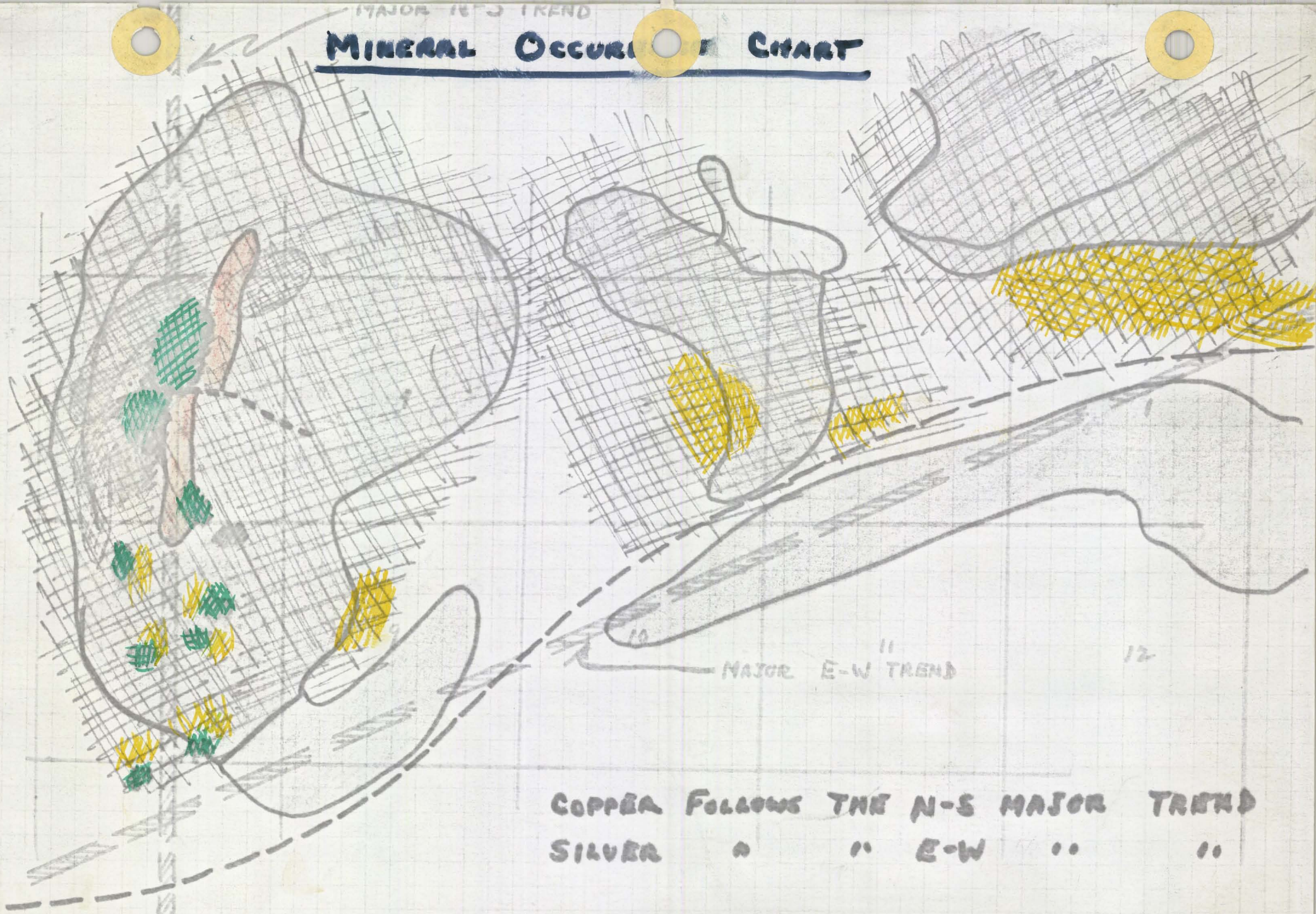
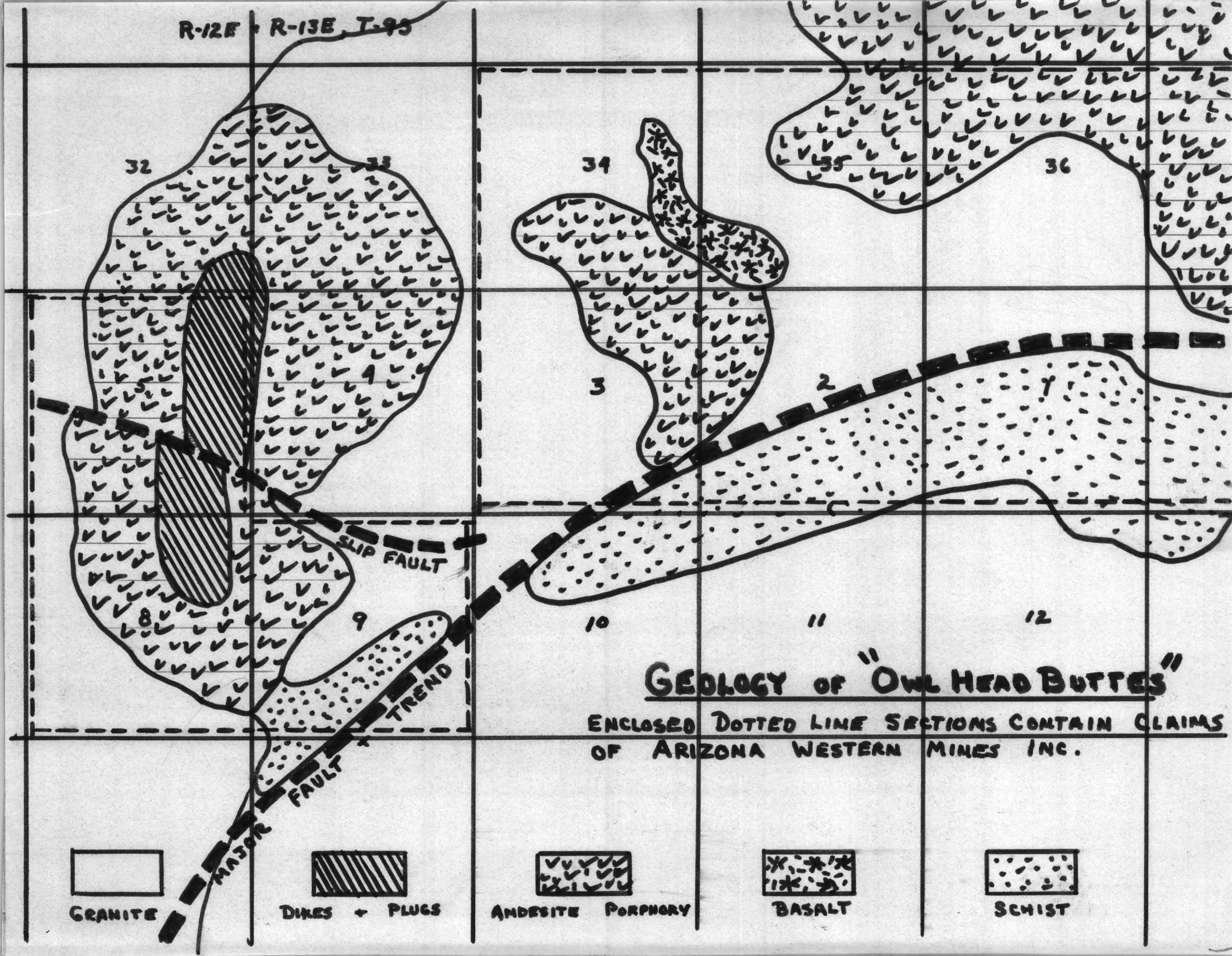
Mineral Occurrence Chart



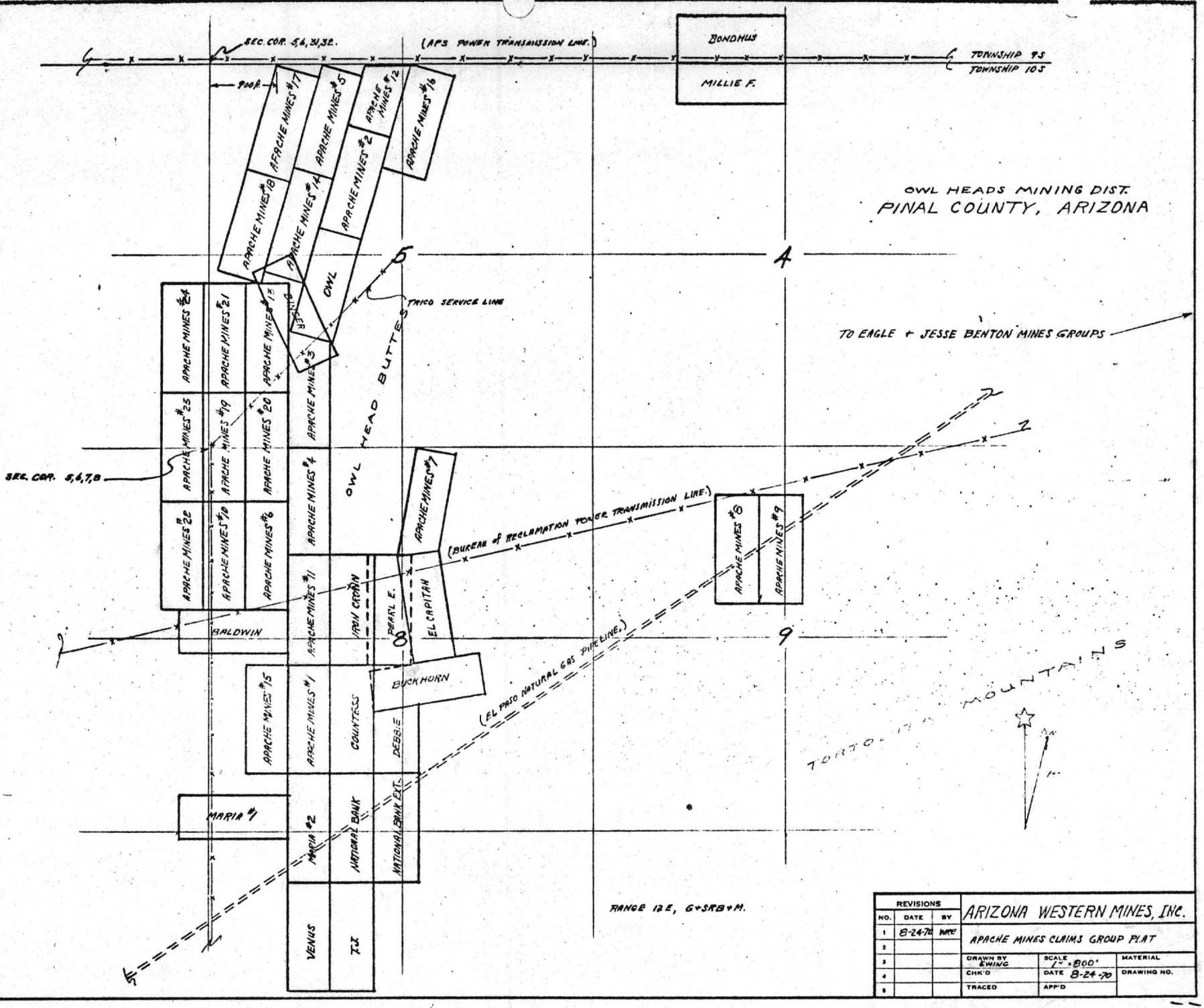
COPPER FOLLOWS THE N-S MAJOR TREND
SILVER " " E-W " "

COPPER SILVER ANDESITE SCHIST BASALT DIKE PINAL SCHIST CONTACT METAMORPHIC ZONE

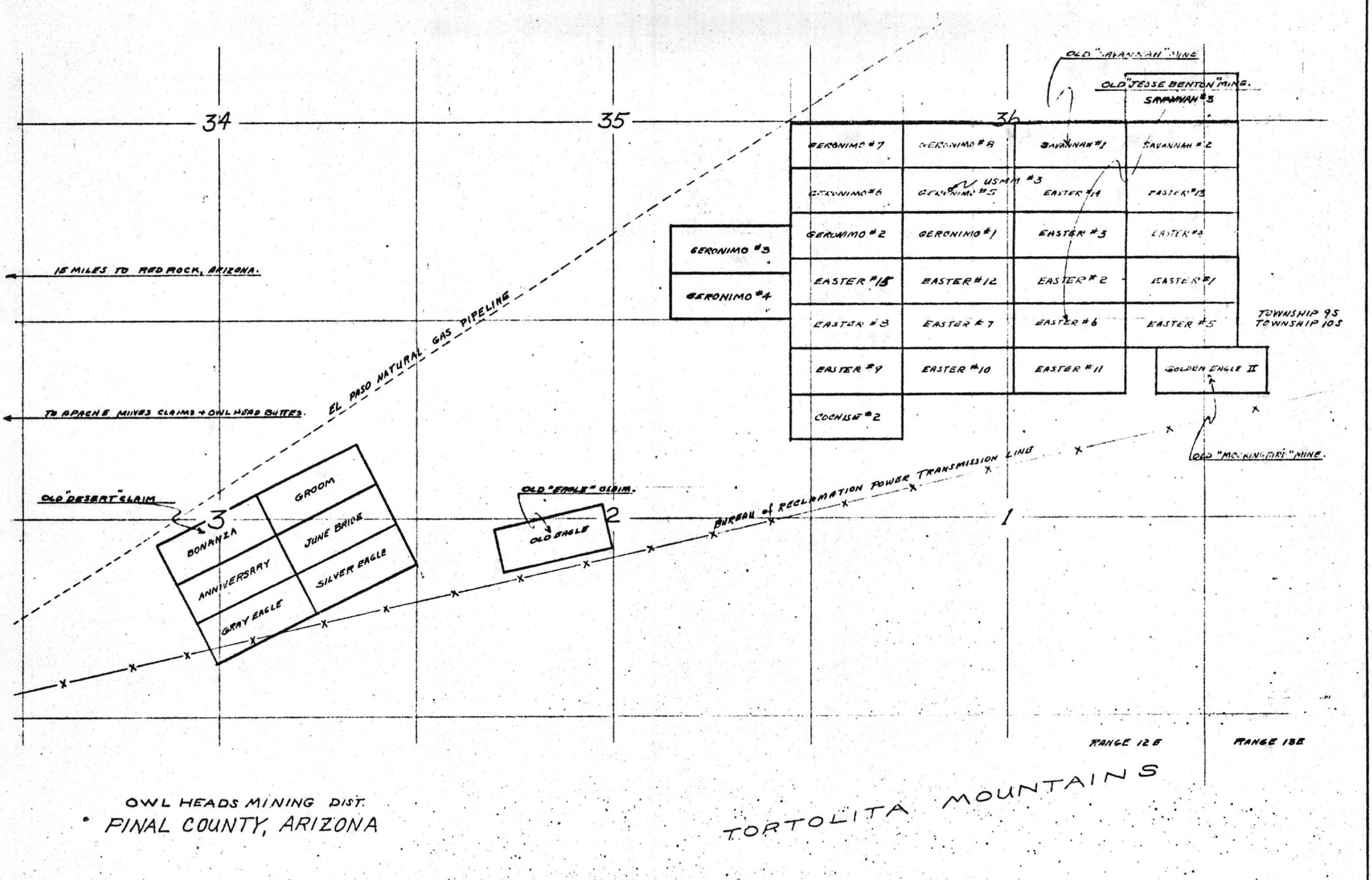


GEOLOGY OF "OWL HEAD BUTTES"

ENCLOSED DOTTED LINE SECTIONS CONTAIN CLAIMS OF ARIZONA WESTERN MINES INC.



REVISIONS			ARIZONA WESTERN MINES, INC.		
NO.	DATE	BY			
1	8-24-70	MRE	APACHE MINES CLAIMS GROUP PLAT		
2					
3			DRAWN BY EWING	SCALE 1" = 800'	MATERIAL
4			CHK'D	DATE 8-24-70	DRAWING NO.
5			TRACED	APP'D	



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ARIZONA WESTERN MINES, INC.

EASTER CLAIMS GROUP PLAT

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LIETZ

(CORTARO)
3748 I

R. 12 E. 491 5' INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—1964 R. 13 E. 499000m.E.

SCALE 1:62500

1 2 3 4 MILES

6000 9000 12000 15000 18000 21000 FEET

1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

ARIZONA

QUADRANGLE LOCATION

ROAD CLASSIFICATION
Medium-duty Light-duty
Unimproved dirt
U.S. Route State Route

...LIES WITH NATIONAL MAP ACCURACY STANDARDS
...SURVEY, DENVER 25, COLORADO OR WASHINGTON 25, D. C.

TORTOLITA MTS., A...
N3230—W11100/15

PRELIMINARY INVESTIGATION OF THE OWL HEAD MINING PROPERTIES

SUMMARY AND RECOMMENDATIONS

The existence of what is believed to be two major cross-trends with wide contact zones containing what could very well lead to large deposits of commercial copper and or silver ore can lead to only one conclusion: a geophysical and geochemical program with the goal of outlining and defining the ore bodies be implemented. Preference should first be given the copper area of the buttes and westernmost claims with the same procedure when financially feasible, for the remaining claims where the silver predominates. When the orebodies are determined, then an exploratory drill program for determining quality and location is in order. It is quite possible that large low-grade deposits of each may be discovered with an extra benefit of other associated minerals as indicated in the Mineral Breakdown and X-Ray Diffraction of composite materials.

INTRODUCTION AND HISTORY

In 1882 the beginning of the decline of hostile Apache activities signaled the first extensive mining activities; but it is most likely that the factual beginning was probably 100 years earlier, as the Spaniards are known to have been mining in 1774 at Quitojoa which is just 70 miles to the SW. Indian paint pots or mortars exist several places in the extremely hard ryolite outcroppings and were most likely worn deeper by Spanish miners pulverizing their gold and silver ore for amalgamating with mercury. 1882 to 1892 was a period of great activity with the Jesse Benton mine being worked night and day with as many as 300 persons living in the immediate vicinity. The ore was freighted 3½ miles down the gulch to the WSW where it was processed through a five stamp mill for its silver content. Ore was reported in as high a grade as $300.00 per ton at 1882 prices. Activity at the turn of the century seemed to slow down except for "highgrading" which is evident in some of the workings. Then around 1917 the Owl Head Copper Mining Company was in existence but whether or not they were strictly promotional or mined some ore is not known. There is no evidence of production. The files at the University of Arizona contain a geological study and report of the Owl Head Butte Mines conducted by a very well known mining engineer in Arizona named Byron O. Pickard, who was well ahead of his times when he said, "The important recommendation is development of both the silver and copper properties. The showings on the copper claims warrant extensive development by churn drill holes. I feel that no company would make a mistake by putting down a few holes in these gossan outcroppings for 500 to 600 feet in depth", unquote.

LOCATION

Owl Head Buttes Mining District is located about 40 miles north of Tucson and 5 miles west of the Tucson-Florence Hyway, with all of the claims this report covers being in R12E, R13E, T9S, T10S, Pinal

County, Arizona. The claims extend south through R12E through sections 5, 8, and 17, thence easterly through sections 1, 2, 3, 4, 9, 10, 35, and 36, with two claims extending into R13E, sections 6 and 31.

OWNERSHIP

Arizona Western Mines Incorporated, an Arizona Corporation that was formed approximately one year ago, is the owner of the 52 unpatented claims and continues to expand their ownership in the immediate area, tying together a very compact group of claims that are contiguous for the most part and encompass all the promising mineral areas.

PHYSICAL FEATURES

The Owl Head Buttes are quite a landmark as they are very pronounced to a viewer traveling either the new interstate 10 from Tucson to Phoenix or the old Tucson-Florence Hyway. They take the shape of the head of the bird for which they are named when viewed from a certain angle, but geologically they are called Dikes or Plugs. They extend upwards precipitously several hundred feet above the surrounding terrain. About a mile SE of the buttes and with very little in the way of foothills the Tortolita mountains begin. The remainder of the surrounding terrain is slightly undulating or rather flat in appearance. Several ranch roads cross the property, one pipe line extends from NE to SW, a high tension line goes from ENE to WSW, and a lower voltage line begins at a ranch house and goes SW then S along the west side. Water seems to be no problem as it is available in wells of not very great depth, but it is understood that some of the water is suitable for cattle but not for human consumption (probably slightly sulphuric acid from decomposition of the pyrites). Average rainfall is 10 inches. Elevations are from 2600' to 3200'. There is a thermal well just 6 miles to the NW where the water temperature averages 160° F., so underground thermal activity (known) is not too far distant.

GEOLOGY AND MINERALOGY

The locale is in the Sonoran Desert Section of the Basin and Range Province, consisting mainly of Pre-Cambian Granite and Schists intruded by a Laramide stock of Andesite Porphory, early Tertiary period with the copper occuring mostly within the porphory but sometimes on the contacts and the silver mainly on the contacts. The large andesite dike, when it intruded the granite and then cooled, caused numerous faults and fissures which became the channelways for the magmatic mineralizing juices. Potassic alteration occurred with wide metamorphosed zoning most pronounced to the west of the buttes following what could very likely be the large underground fault trending N and S and also along the base of the northern edge of the Tortillita Mountains which is most certainly a large deep fault trending NE to SW. Both of these trends are the basis for the extensive mineralization in the area.

Noted geologists such as Mayo (1958), Schmitt (1959), Landwehr (1967), and Gilbert with Sumner (in Titley, 1968) have noted that a majority of southern Arizona's major copper-producing areas occur on one or more distinct trends, or on the intersection of cross trends.

If one will draw a straight line from the Klondike mining area through Mammoth, then Owl Head Buttes, then Silverbell, and if so inclined, by a slight curve on to Ajo. Now another major trend would be from Magma in Superior, to the Owl Head Buttes, to the area of 5 large copper open pits (Pima, Mission, Anaconda's Twin Buttes, Duval's Esperanza and Sierrita) on the eastern slopes of the Sierritas and on to the old Ruby area and even beyond to an area of great potential in Sonora, Mexico. "These trends if real rather than accidental, may be related to ancient deep-seated fracture zones that have provided access to mineralizing solution from deep within the earth's crust during several mineralizing epochs." The previous sentence is a quote from "Mineral and Water Resources of Arizona" published by the Arizona Bureau of Mines in 1969 which also states "If so (referring to the cross trends) they may provide the most fruitful areas for future exploration".

There is another most notable feature when one studies the Owl Head area from every concievable angle and this author is surprised that it has not previously been reported. There is a line of demarkation along the north edge of the Tortolitas which must be a major fault trend as it can be substantiated by five different criteria for faulting. From section 6 it extends west and a little south through sections 1, 2, 3, 10, 9, 16, and 17, and can be discerned readily in the Geological Survey Map (Tortolita Quadrangle), as it follows the edge of the scrub foliage and also the main watercourse. Note further that all mineralization is to the north of this fault and the geological structure to the north is of different material.

The large andesite dike which extends from section 32 southwardly through section 5 then curving slightly southeasterly through section 8 and 17 where it intersects the large fault trend is highly mineralized in it's west area and along it's west contact and then towards the east in sections 8 and 17. Copper shoots show as oxides in the andesite itself and in the metamorphosed zone while the silver becomes more pronounced towards the south and east at the lower end where it is found at the contact of the andesite with the granite. This contact which extends along the west and then east is ill-defined and at times several thousand feet wide. Fault trending is NW and N dominant, NE and E subordinate. Dip on most are either vertical or dip steeply to the west.

The ore shoots of copper that show as staining and deposits of Chrysacolla or Malachite on the already iron stained andesite where the gossans are the most pronounced, are not really spectacular. When considered with the complicated geology, evidence of hydrothermal action, late Cretaceous and early Tertiary intrusion and perhaps most important the possibility of major cross-trending, the area must be a prime target for extensive underground exploration. (As a matter of interest there are other areas that have shown very little on the surface, or nothing, such as Ray and still several hundred feet underground large deposits of copper). Native Copper, Chrysacolla, Malachite, Cuprite, are most pronounced with even a little Bornite and Covelite which would indicate that the ore body could be fairly close to the surface and consist of a disseminated Chalcocite blanket such as at Silverbell with lesser values in Chalcopyrite, Pyrite, and Bornite at greater depth. As a

matter of additional interest the material in the gossans shows minute disseminated particles of Sheelite, indicating the presence of Tungsten. Specular Hematite is present and could be responsible for much of the iron staining. In some of the washes Titaniferous Magnetite and Ilmenite are present which might become useful in the future should the metallurgists solve the extraction problem of the Titanium. Molybdenum will probably also be found at depth as it is in so many like occurrences.

The SE quarter of Section 5 which is in the form of a horseshoe has probably been formed by a slip fault close to what is now the water course through the area. This being true it would qualify the misalignment of the two buttes directly south. Indications are that south of the fault there was a western directed slippage of 1/10 mile compared to the north area. This would prior to faulting have the buttes in good NS alignment. The strongest indication of copper oxides is at the mouth of this horseshoe and could be indicative of extensive copper mineralization at depth as the faults, fissures, etc., provided the means for same to occur.

A composite surface geochemical check of Section 5 and 8 was performed with visual microscopic observations identifying 32 minerals per attached Mineral Exhibit. The same material was then utilized for an X-Ray diffraction in order to determine the elements involved; per attached X-Ray Diffraction Exhibit. Both are most interesting in that they not only contained commercial amounts of Copper and Silver but contained worthwhile percentages of other rare, strategic or valuable metals that should their removal be practical become valuable to the mining operations.

About four miles due east of the copper area is a very extensive deposit of silver oxides, bromides, chlorides, etc., which have been extensively worked in the past; but it is not believed that anyone has ever attempted to go to depth in the sulphides. Surely an area such as this with so much high grade silver found in contact veins where the andesite meets the granite and even in zones of pegmatites, must have had a source at depth. Recently there has been a search underway for large low-grade silver deposits as it is now agreed that profitable mining of same can be accomplished. With this thought in mind a program of drilling several hundred feet into the sulphides might be in order in the six claims contained in section 3, and the twelve claims contained in sections 1, 36, 31, and 6.

The silver area shows for the most part Cerargyrite, Bromyrite, and Embolite, with some Pyrargyrite and Argentite but at no time has any of the base metal sulphides shown up. Should the Silver content of any extensive area look promising, open pit mining of same would present a challenge that could be most profitable.

COST AND EVALUATION

It is quite difficult to place a value on the properties as the potential must carry considerable weight. The corporation has expended considerable monies in it's "package of claims" program, explorative

cross cutting for sampling with a bladed dozer and back hoe as well as the drilling program now underway. The claims could presently be worth a miniumum of $1,000.00 each offered in a package deal just for their salvage value, or overnight they could bring twenty times this amount resulting from discovery of a large volume of low grade ore. Still more satisfying could be participation in the revenues with a large mining company who would place the properties in production on a large scale. As indicated before, the true value is an unknown but the future potential of these properties looks very bright at the present.

C. H. Culp
NORAM Mineral Associates
Tucson, Arizona

EXHIBITS:

Map of Geology
Mineral Breakdown
X-Ray Diffraction

CHC/ac

The Apache Mines of the Owl Head District, Arizona

History of Old Properties in Pinal County—Geology of the Camp and a Description of Developments—Gold, Silver, Copper and Lead Are Present.

BYRON O. PICKARD*

Thirty-three miles west of Tucson, on the Sunset Route of the Southern Pacific railroad, is a little junction town called Red Rock. The Apache mines lie nine miles northeast of this little town and are reached by a wagon road from the railroad. The road can be easily traversed by anything on wheels, as it crosses the desert between Red Rock and the Owl Head buttes of the Tortilita mountains. As is usual with mining camps in Arizona, there is a railroad survey close at hand, and probably some day the line will be built. This railroad survey is the Phoenix-Tucson shortcut and passes within two miles of the property. There is an automobile road being constructed between Tucson and Phoenix at the present writing, and this road will be very close to the property.

Tucson is the nearest base of supplies. At this city, which for many years has been a mining center, all ordinary supplies used in mining can be obtained. The more complex machinery is ordered from El Paso or San Francisco.

There is a smelter at Sasco, Ariz., which is in the opposite direction from Red Rock, and is connected to Red Rock by a six-mile railroad. This smelter is at present closed down, but its being reopened in the near future is practically assured. Other smelters close at hand are the Copper Queen reduction works at Douglas, Ariz.; the El Paso Smelting Co. at El Paso, Texas; the American Smelting and Refining Co. smelter at Hayden, Ariz.

The present owners of the mine are Count and Mme. Morajeska of Red Rock, Ariz. They have held possession for over 18 years. The white chief of the Apache Indians (locally known as Capt. Jeffords), remembering the many kindnesses of Mme. Morajeska when she was with the Apache Indians collecting information of their history and customs for the Smithsonian Institute, showed her some fine specimens of silver ore and promised to give her the property if she would go with him to see the old workings. She later visited the workings with him and located the claims. Previous to their being shown to Mme. Morajeska the silver claims had been worked by gambocinos, Indians and roving prospectors, and it has been ascertained that over $130,000 worth of silver ore has been extracted from the old workings and treated at a small mill which was operating in the district in the early days. Much evidence of this old work exists.

Other mines in the Owl Head district are the Pinal & Calumet mines, which have shipped considerable jig concentrates and at present are planning work on a large scale. The Jesse Benton silver mines have shipped $500,000 worth of silver ore. In the Silver Bell district, south of the Apache mines, is the large Silver Bell property. The Sasco smelter was built to treat the ores from this mine, and is closed down now on account of being taken over by one of the large copper companies, which does not need the ores at present and is holding them in reserve. Other properties within 20 miles are the Buffalo Bill mines at Camp Bonita, near Oracle, and the Christmas mines.

There is no timber; water is developed by deep wells, and the elevation is 2,000 ft.

To arrive at conclusions on the detailed geology of the district, and property, would require several weeks' study, and to arrive at definite conclusions cannot be done until extensive underground work has been carried on. One cannot avoid being impressed by the extreme age of the formations. Everywhere are signs of erosion and weathering. The old river beds, the extreme metamorphosed condition of the rocks, the rounded hills and no sharp high mountains, all show proof of the old age. The major part of the 20 claims is covered with wash and vegetation. Speaking generally of the geology, the country rock or main formation is muscovite granite intruded by an immense dike of ferruginous andesite porphyry. This intrusion caused several fissures in the granite, which were consequently filled up and formed the veins of one part of the property. These are mainly filled with decomposed granite, andesite porphyry, quartz, clay, all stained highly with the red oxide of iron. The mineralization in the oxidized zone is mainly hematite with some silver and gold. In the large dike of andesite porphyry, which is several hundred feet wide and very persistent, striking across the entire group of claims and in beyond in both directions, there are several mineralized zones, especially near the granite foot wall contact. Here the granite resembles a muscovite schist. I at first thought the country rock was made up of the schists so common in the Ray and Globe districts, but a closer examination revealed it to be a highly metamorphosed muscovite granite. As before noted, the andesite porphyry is highly ferruginous; that is, highly stained with red iron oxide. The whole body is highly metamorphosed and mineralized. In numerous places are found the true gossan with copper stains in and around them, so common to the outcrops of the world's largest copper bodies. These gossan outcrops are very extensive, both in magnitude and number.

On the footwall contact there is found a body of calcite over 30 ft. wide and very long, especially on the Iron Crown No. 1 claim. I do not believe this to be a metamorphosed limestone, as there are no evidences of fossils or of its being a marine or lacrustine deposit. I am more inclined to believe that its origin is from the metamorphosed feldspars of the andesite porphyry. This body of calcite is also stained with hematite and with pyrolusite (manganese dioxide).

The strike of this andesite porphyry is north 10 degrees east on the northern end of the property, taking a gradual curve to the east about the center of the property. The strike of the fissure veins will be taken up later.

The metals found on the property having commercial value are gold, silver, copper and lead. Very little lead is found except in the fissure veins with the silver. The copper occurs in its secondary forms, that is, malachite, azurite, cuprite and chalcocite, and also native copper, and is found only in the andesite porphyry dike. The silver occurs as native wire silver, also in its chloride and bromide salts, the chloride (cerargyrite or horn silver) being its most common occurrence in the oxidized zones of the fissure veins. It occurs to a considerable extent with the copper glance in the dike. The gold is found as

*Engineer of Mines, Phoenix, Ariz.

an accessory to the silver and copper in both the fissure veins and in the dike. Other metals, such as iron and manganese, are found in many forms and in abundance; these, combined with the calcite, are very valuable fluxes for smelting. Clay, quartz, feldspars and other minerals common to igneous rocks are found in both their primary and metamorphosed conditons. Much mica, both muscovite and biotite, is found. As the sulphide or primary zone has not been exposed, none of the primary minerals of the metals, silver, copper or iron, were observed.

As before noted, there are two different ore formations, namely, the ore body occurring in the andesite porphyry dike and the fissure veins in the granite. While the origin of the two different types of ore bodies is undoubtedly the same, their difference in character and mineralization necessitate a separate discussion. Beginning on the northern end of the property, and striking nearly due south, is the immense dike of andesite porphyry. It is persistent across the Nodiatee, Virginia No. 3, Virginia No. 2, Apache, Iron Crown No. 1, where it takes a gradual curve to the east through the El Capitan (a fractional claim), across one corner of the National Bank claim, and here leaves the property. At the foot wall contact of the granite and andesite porphyry, for over 100 ft. to the east, copper stains, immense deposits of iron oxide, veinlets of copper glance, copper stains here and there indicate a large deposit of ore, the chief metal of commercial value being copper and occurring with it in varying amounts gold and silver. At one small working on the Virginia No. 3 a sample was taken of yellow iron oxide (limonite or yellow ochre), which assayed 5.62 ozs. gold and 3.2 ozs. per ton of silver.

On the Victor, I'm It, Ida and Buckhorn claims granite prevails and is covered almost entirely by wash and vegetation. Scattered are little mounds of andesite porphyry, evidently shoots from the main dike previously described. On these claims are found the fissure veins described earlier in the report. How these veins were discovered by the old prospectors or Indians is a mystery to me, as I could find no evidences of their outcroppings. They are revealed at present by the old workings and their character and size in these old workings indicate persistency and mineralization. The foot walls and hanging walls are very strong; the vein filling is not frozen, but easily cleaned off, leaving both walls clean and showing slickensides, thus proving that they were originally wide fissures in the granite and apparently caused by the intrusion of the immense dike of andesite porphyry. The vein filling is granite highly metamorphosed, andesite porphyry, clay and mostly quartz. There is very little copper in the present filling in the fissure veins. The chief metal of commercial value is silver and its associated gold. Two main fissure veins are shown by the workings. The larger one is on the Victor claim and is 15 ft. from granite foot wall to granite hanging wall, with the intervening vein filling mineralized to a slight extent. The hanging wall ore shoot is about 4 ft. wide; the foot wall ore shoot shows 3 ft. wide. This vein strikes north 80 degrees west and dips to the east at the flat angle of 40 degrees. The next important fissure vein is shown by the workings on the Buckhorn claim. This vein strikes at nearly right angles (north 20 degrees east) to the Victor vein, and if continuous will cross the Victor within 50 ft. of the present workings on the Victor. It dips 45 degrees to the west. The vein filling is the same as the Victor, as are practically all its main characteristics. Its width is less, being about 5 ft. on the average.

The development work on the silver fissure vein is quite extensive, but was done with the idea of robbing the mine, and all the ore that could be taken out with the least expense was gouged out and sent to the little concantrator. This left the workings in a bad condition and, consequently, they are practically inaccessible. Evidences of at least 1,000 ft. of work are to be found on the Victor claim. History has it that a shaft 100 ft. deep was driven on the hanging wall ore shoot of the Victor vein, and that it had to be abandoned with $500 ore in the bottom on account of water and no means at hand to take care of it. Other than a specimen rich in silver and lead, shown me and reputed to be taken from the bottom of this shaft, I found no means of verifying this statement. There is no very high-grade ore on the dumps. Several piles that will average $20 to the ton were seen. Extensive stopes, gouging here and there, indicate that ore of some kind was taken out of these workings. The same is true at the Buckhorn shaft. Here the workings consist of an incline shaft 45 ft. deep, drifts on the 35-ft. level to the south and a stope 25 ft. long and 15 ft. high. The legend that $130,000 worth of silver was shipped out of the two shafts is probably nearly true.

The development on the copper claims consists entirely of shallow shafts, dug for assessment work. There are many of these on every claim, but with the exception of proving the existence of copper in the large dike, and especially so near and on its contact with the granite, the development is of no value to the copper claims.

I sampled the property mainly to get an idea as to whether or not the vein filling was mineralized. I find it generally very unsatisfactory to sample these antiguas, and especially the workings gouged out by Mexican gambocinos, as they never leave anything of value in sight and their workings are in such shape that any sample taken has no practical value to the mine or property. As the copper veins are very narrow, and the extent of the croppings so large, individual surface samples would have no practical value, so I confined my sampling to the silver claims, with the exception of two.

The Buckhorn stope, 4 ft. wide, assayed $1.75 per ton in gold and silver; Buckhorn dump, $11.75 per ton in gold and silver; Victor foot wall ore shoot, 3 ft. wide, $10.35 per ton in gold and silver; Victor hanging wall ore shoot, 4 ft. wide, 50 cents per ton in gold and silver; Victor hanging wall ore shoot, 6 in. wide and 60 ft. deep, $4.65 per ton in gold and silver; Victor vein filling, $3.20 per ton in gold and silver; Victor dump, $18.20 per ton in gold and silver. Picked specimen chalcocite: Gold 0.46 oz., silver 35.6 ozs., copper 55.8 per cent; total value per ton (copper at 14 cents), $192. Sample of yellow ochre assayed 5.62 ozs. gold per ton and 3.2 ozs. silver; total value per ton, $114.15.

A careful study of these samples, and remembering the conditons existing and the kind of ground they represent, will reveal that silver exists in the fissure veins of the silver claims; that it has been extracted in considerable quantities has been proven by the dump samples. All the samples taken in the silver claim workings show silver and gold and are very encouraging, considering the nature of the workings and the fact that the ground has been subjected to leaching and weathering for many years.

There is not enough ore on hand to advise about the treatment. Judging by the ore on the dump, I look for a very simple ore that will be amenable to amalgamation and cyanidation. As to the copper ores, depth alone will tell their story.

The important recommendation is development of both the silver and the copper properties. The showings on the copper claims warrant extensive development by churn drill holes. I feel that no company would make a mistake putting down a few holes on these gossan croppings for 500 to 600 ft. in depth.

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15 MILES TO RED ROCK, ARIZONA

TO APACHE MINES CLAIMS & OWL HEAD BURIES

EL PASO NATURAL GAS PIPELINE

OLD "DESERT" CLAIM

OLD "EAGLE" CLAIM

OLD "SAVANNAH" MINE

OLD "JESSE BENTON" MINE

GERONIMO #7	GERONIMO #8	SAVANNAH #1	SAVANNAH #2
GERONIMO #6	GERONIMO #5	EASTER #14	EASTER #13
GERONIMO #2	GERONIMO #1	EASTER #3	EASTER #4
EASTER #15	EASTER #12	EASTER #2	EASTER #1
EASTER #8	EASTER #7	EASTER #6	EASTER #5
EASTER #9	EASTER #10	EASTER #11	GOLDEN EAGLE II
COCHISE #2			

GERONIMO #3

GERONIMO #4

USMM #3

TOWNSHIP 9S

TOWNSHIP 10S

OLD "MOCKINGBIRD" MINE

BUREAU OF RECLAMATION POWER TRANSMISSION LINE

BONANZA	GROOM
ANNIVERSARY	JUNE BRIDE
GRAY EAGLE	SILVER EAGLE

OLD EAGLE

RANGE 12 E

RANGE 13 E

TORTOLITA MOUNTAINS

OWL HEADS MINING DIST.

PINAL COUNTY, ARIZONA

REVISIONS		
NO.	DATE	BY
1	8-24-70	E
2		
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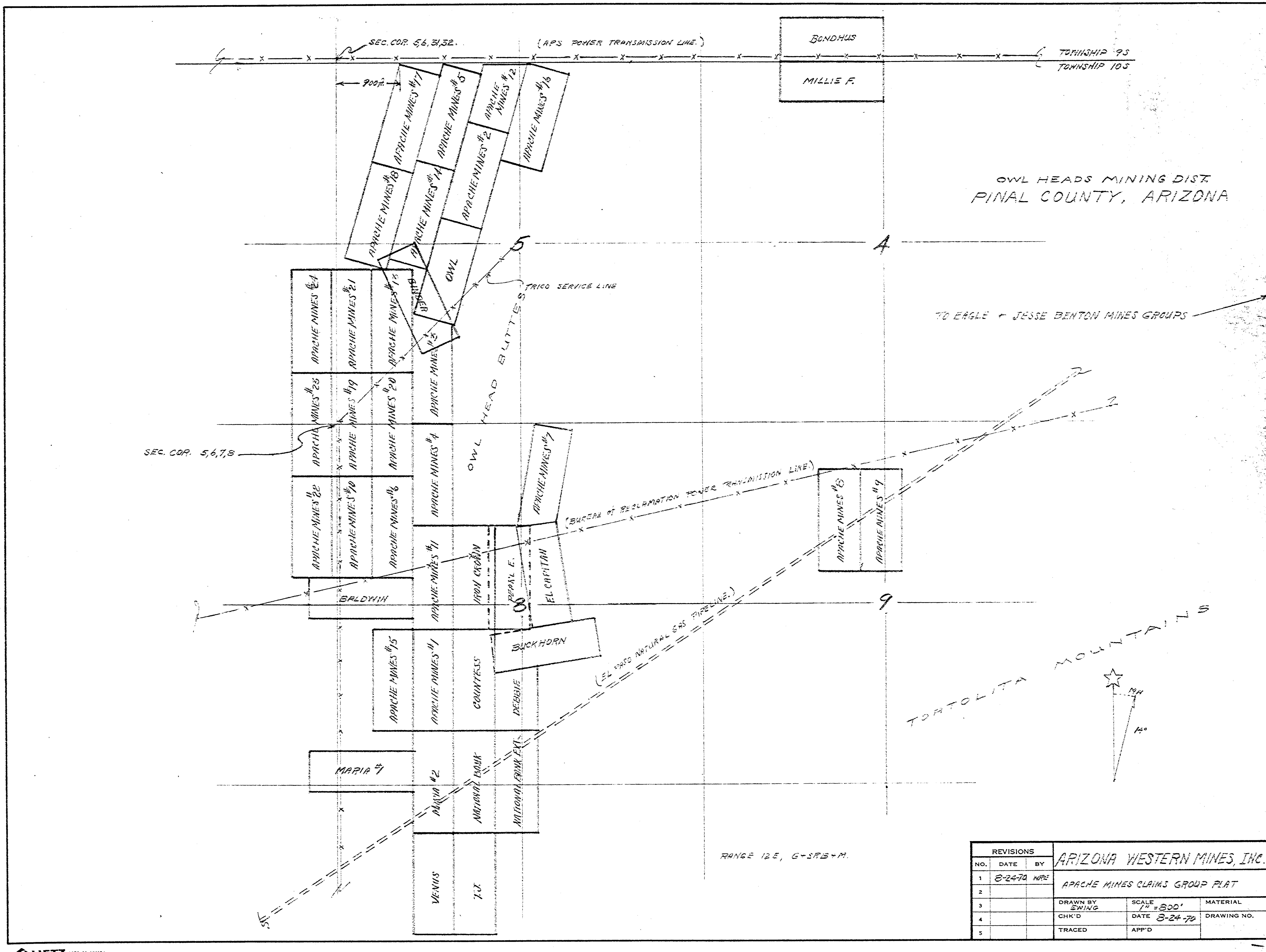
ARIZONA WESTERN MINES, INC.

EASTER CLAIMS GROUP PLAT

DRAWN BY WRE	SCALE 1" = 800 ft.	MATERIAL
CHK'D	DATE 8-26-70	DRAWING NO.
TRACED	APP'D	


SEC. COR. 5,6,31,32.
(APS POWER TRANSMISSION LINE.)
BONDHUS
MILLIE F.
TOWNSHIP 9S
TOWNSHIP 10S
900 ft.
APACHE MINES #17
APACHE MINES #5
APACHE MINES #12
APACHE MINES #13
APACHE MINES #18
APACHE MINES #14
APACHE MINES #2
OWL HEADS MINING DIST.
PINAL COUNTY, ARIZONA
5
4
OWL
TRICO SERVICE LINE
TO EAGLE + JESSE BENTON MINES GROUPS
APACHE MINES #24
APACHE MINES #21
APACHE MINES #23
APACHE MINES #19
APACHE MINES #20
APACHE MINES #3
OWL HEAD BUTTES
SEC. COR. 5,6,7,8
APACHE MINES #22
APACHE MINES #10
APACHE MINES #6
APACHE MINES #4
OWL
APACHE MINES #7
(BUREAU OF RECLAMATION POWER TRANSMISSION LINE.)
APACHE MINES #8
APACHE MINES #9
APACHE MINES #11
IRON CROWN
PEARL E.
EL CAPITAN
BALDWIN
8
9
(EL PASO NATURAL GAS PIPELINE.)
BUCKHORN
APACHE MINES #15
APACHE MINES #1
COUNTESS
DEBBIE
TORTOLITA MOUNTAINS
MN
14°
MARIA #1
MARIA #2
NATIONAL BANK
NATIONAL BANK EXT.
VENUS
T.J.
RANGE 12E, G+SRB+M.
REVISIONS
NO.
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BY
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8-24-70
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ARIZONA WESTERN MINES, INC.
APACHE MINES CLAIMS GROUP PLAT
DRAWN BY EWING
SCALE 1" = 800'
MATERIAL
CHK'D
DATE 8-24-70
DRAWING NO.
TRACED
APP'D
LIETZ 1050-68 18X24