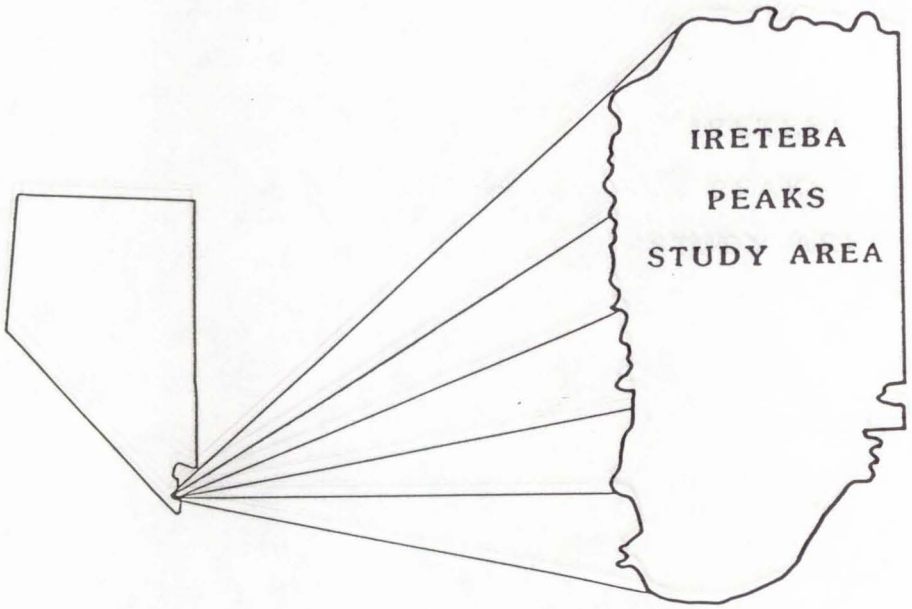
MLA 46-88

Mineral Land Assessment/1988
Open File Report

Mineral Resources of the Ireteba Peaks Study Area, Clark County, Nevada



BUREAU OF MINES
UNITED STATES DEPARTMENT OF THE INTERIOR

MINERAL RESOURCES OF THE IRETEBA PEAKS STUDY AREA, CLARK COUNTY, NEVADA

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MLA 46-88

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UNITED STATES DEPARTMENT OF INTERIOR
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PREFACE

The Federal Land Policy and Management Act (Public Law 94-579, October 21, 1976) requires the U.S. Geological Survey and U.S. Bureau of Mines to conduct mineral surveys on U.S. Bureau of Land Management administered land designated as Wilderness Study Areas ". . . to determine the mineral values, if any, that may be present . . . ." Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a Bureau of Mines mineral survey of a portion of the Ireteba Peaks Wilderness Study Area (NV-050-438), Clark County, NV.

This open-file report will be summarized in a joint report published by the U.S. Geological Survey. The data were gathered and interpreted by Bureau of Mines personnel from Western Field Operations Center, East 360 Third Avenue, Spokane, WA 99202. The report has been edited by members of the Branch of Resource Evaluation at the field center and reviewed at the Division of Mineral Land Assessment, Washington, DC.

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UNIT OF MEASURE ABBREVIATIONS USED IN THIS REPORT

cps	count per second
ft	foot
in.	inch
mi	mile
oz	troy ounce
oz/ton	troy ounce per ton
ppm	part per million
%	percent
lb	pound (avoirdupois)

SUMMARY

In 1987, at the request of the Bureau of Land Management, the U.S. Bureau of Mines studied 13,374 acres of the 14,994-acre Ireteba Peaks Wilderness Study Area (NV-050-438) in order to evaluate its identified mineral resources. The study area is located in Clark County, NV, about 4 miles south of Nelson, NV.

No identified resources were found within the Ireteba Peaks study area, although there are identified subeconomic resources just outside of the study area boundary. Most of the area is underlain by Tertiary granitic rocks, which apparently postdate mineralization. The area is virtually surrounded by mining districts with mines developed in older rock units. On the north side, quartz monzonite, volcanic tuff, and tuffaceous sediments in the Eldorado mining district host deposits of gold, silver, copper, zinc, and mercury. On the south side, Precambrian gneiss, intrusive andesite porphyry, and hornfels in contact with quartz monzonite in the Searchlight mining district host gold, silver, copper, and lead deposits. The Newberry mining district to the southeast had copper, gold, and silver mineralization in Precambrian gneiss and andesite.

During this investigation, 13 properties were examined. Five of the properties (H & E claims, Cobalt claims, AJ #1, Five Spot claims, and Crystal Lode) are on the border and extend partly into the study area and the other eight are just outside the area, mostly on the west side. Two properties are patented (Crystal Lode and Sazarac patented claim groups).

The H & E claims, adjacent to the study area, cover a mineralized zone in Precambrian gneiss. No continuous vein structure was observed; however, disseminated copper-gold-silver could be widely distributed in the gneiss that covers a large area inside the study area. Further exploration including locating faults and other structures, which could have controlled mineralization, is necessary to define any resources.

Future mining is possible on the Sazarac patented claim group and Cobalt claims, on the border and outside of the southeast edge of the study area. The Cobalt claims contain an identified subeconomic resource of 240,000 tons at a grade of .037 oz/t gold and .12 oz/t silver. Gold has been mined on the Sazarac patented claim group in the past. There is a high probability that additional resources could be found in the area covered by these claims. On the surface, the favorable geologic environment that occurs on these claims extends a short distance into the study area.

Identified subeconomic silver resources totalling 170,000 tons of 0.41 oz/t silver on the BMB No. 1 claim are outside of the study area. A projection of mineralized rock southerly from the claim goes into an area of alluvial cover. The geologic environment is favorable for further exploration which might define an ore deposit on the claim and identify more resources to the south or southeast.

There may be extensions of high-grade gold veins on the St. Louis property. However, the veins exposed in the workings parallel the boundary of the study area and do not appear to trend into it. The mine has been extensively stoped and was not entered during the study.

Beryl (a source of beryllium) has been reported near the area in a pegmatite, but no indication of this mineral was found. Also, a uranium anomaly was reported, but no high concentrations of radioactivity were encountered. Sand and gravel resources fill valleys outside of the study area on both the east and west sides. Therefore, no demand is anticipated for the much smaller amount of material which occurs in the drainages of the study area.

INTRODUCTION

This report describes the USBM (U.S. Bureau of Mines) portion of a cooperative study with the USGS (U.S. Geological Survey) to evaluate mineral resources and potential of a part of the Ireteba Peaks Wilderness Study Area at the request of the BLM (U.S. Bureau of Land Management). The USBM examines individual mines, prospects, claims, and mineralized zones, and evaluates identified mineral and energy resources. The USGS evaluates potential for undiscovered resources based on areal geological, geochemical, and geophysical surveys. Results of the investigations will be used to help determine the suitability of the study area for inclusion into the National Wilderness Preservation System. Although the immediate goal of this and other USBM mineral surveys is to provide data for the President, Congress, government agencies, and the public for land-use decisions, the long-term objective is to ensure the Nation has an adequate and dependable supply of minerals at a reasonable cost.

Setting

The Ireteba Peaks study area is located in Clark County, NV, about 4 mi south of Nelson, NV, and adjoins the Lake Mead National Recreation Area. The study area contains 13,374 acres of the 14,994 Ireteba Peaks Wilderness Study Area (fig. 1). The study area is bordered on the east side by the Lake Mead National Recreation area, on the north side by a powerline, and on the west and south sides by a line generally following the 4,000-ft contour at the base of the mountains. Access to the study area is from the powerline road on the north side, U.S. Highway 95 on the west, and the Cottonwood Cove road on the south. There is no vehicle access from the east.

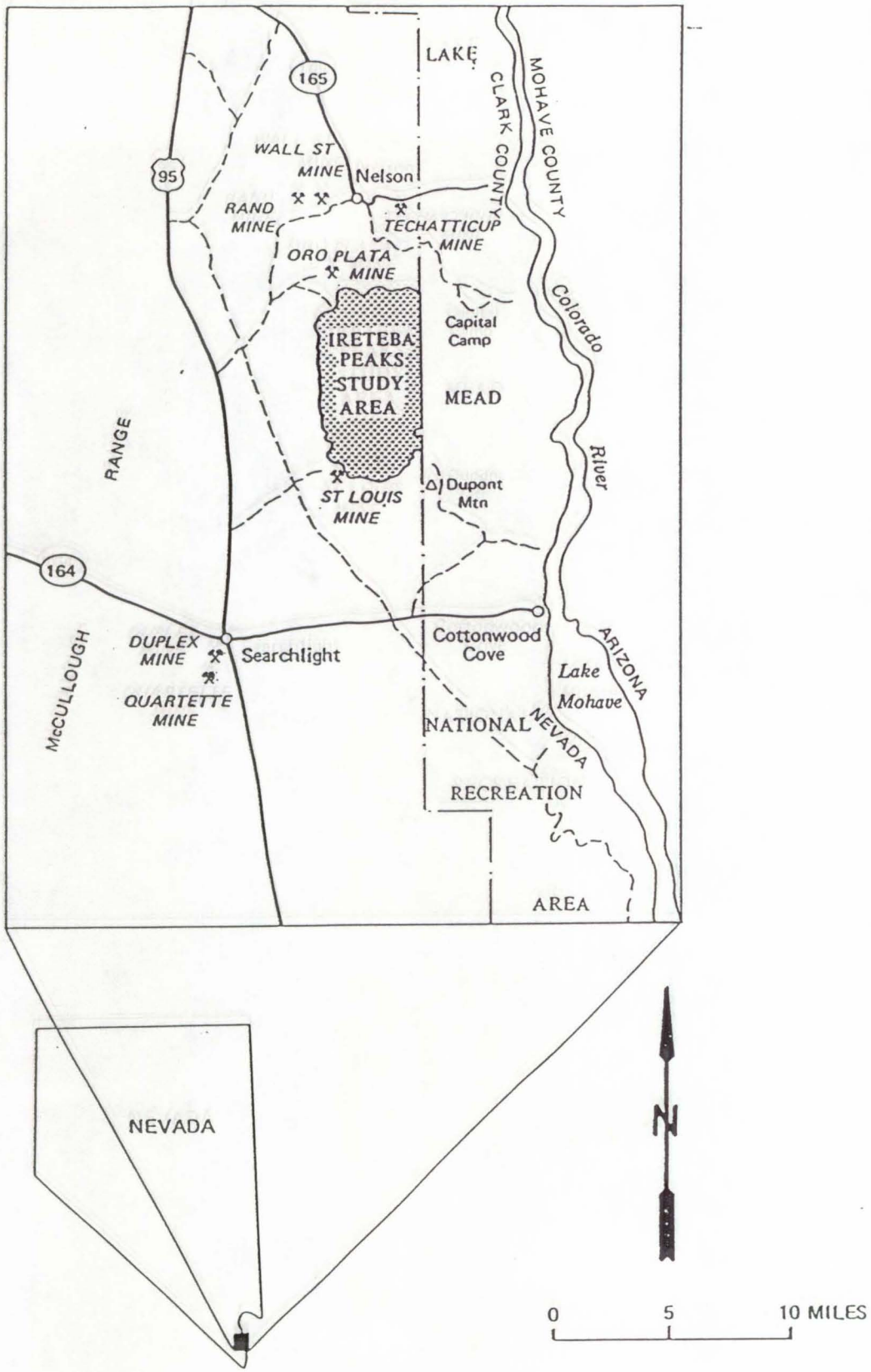


FIGURE 1.— Location of the Ireteba Peaks study area, Clark County, NV

The rugged mountain terrain has elevations ranging from about 1,960 to 5,072 ft. Vegetative cover is generally sparse, consisting of grasses, cacti, and other succulants. Cholla cacti are particularily thick in some areas and present a hazard to anyone hiking.

Previous Studies

Many reports and newspaper articles describe mining and other activity in the Eldorado, Searchlight, and Newberry mining districts. These are noted in the section on mining history section later in this report. The first published geologic report that covered the region was made by G. K. Gilbert in 1871 during the Wheeler topographic survey (Kantor, 1961, p. 3). However, Dr. O. Lowe reported geological investigations by "an assistant of Professor Silliman, in 1865; by the State geologist of Nevada, in 1869;" (Wheeler, 1876, p. 61). Spurr (1903, p. 15-17, 138-139, plates I and II) reported Gilbert's work in a publication which is more widely available. Ransome (1907, p. 63-68) did a brief reconnaissance of the Opal Mountains (now known as the Eldorado Mountains). Hewett and others (1936) discussed the mineral resources around Boulder Dam. Bowyer and others (1958) mapped the area on a 1:200,000 scale. Other geologic reports that are pertinent to the study area include Longwell's (1963) reconnaissance mapping, Longwell and others' (1965) geologic and mineral resource study of Clark County, Stewart and Carlson's (1978) geologic map of Nevada, and Stewart's (1980) accompanying report. Granitic rocks of the Eldorado Mountains have been studied in detail by Volborth (1963, 1969, and 1973). Garside (1973) listed all of the radioactive mineral occurrences reported in Nevada. Qualheim (1978) did a hydrogeochemical and stream sediment study of the area covered by the Kingman 2^{o} sheet. Geophysical studies are described in Bracken and Kane's (1982) gravity map of the Kingman 2^{o} sheet and Luning and others' (1982) National Uranium Resource Evaluation (NURE) study of the same area. Smith and Tingley (1983) reported on the Stateline Resource Area for BLM, and the U.S. Bureau of Land Management (1983) contracted a geology, energy, and minerals (G-E-M) study of the study area.

Present Study

This USBM mineral investigation of the study area includes a collection of information related to current and past mining activities. Library research included examination of USBM files and MILS (Mineral Industry Location System). Claim location data were taken from BLM mining claim recordation indices, BLM land status and use records, and Clark County claim records.

Field investigations were conducted between March and May 1987 and during May 1988. Ninety-seven rock and one alluvial samples were collected. Rock samples were of four types: 1) chip - a regular series of rock chips taken in a continuous line across an exposure; 2) grab - a collection of rock fragments taken at random from a dump; 3) select - handpicked chips of the highest grade rock available collected from dumps or stockpiles; 4) random chip - rock chips taken at random intervals over a given area of an apparently homogeneous exposure.

Rock samples were crushed, pulverized, and split at WFOC (Western Field Operations Center). All samples were checked in the WFOC laboratory for radioactivity and fluorescence. The samples were then sent to two contract laboratories and analyzed either for 18 elements 1/ by inductively coupled spectrometry (ICP) or 17 elements 2/ by a combination of methods including ICP, fire assay-AA (gold), DC plasma spectrometry (nickel), cold vapor-AA (mercury), and x-ray fluorescence (barium). In addition, 17 samples were analyzed for cobalt using atomic absorption (detection limit of 1 ppm) and seven samples for beryllium using atomic absorption (detection limit of 0.5 ppm). Samples in which gold, copper, lead, and zinc exceeded the upper detection limit of the geochemical analytical method were reassayed. High gold samples (oz/t) were determined by fire assay, and high copper, lead, and zinc (%) by atomic absorption.

The placer sample consisted of two 14-in. gold panfuls of material collected from a dry stream channel. At WFOC, the alluvial sample was weighed, wet screened to -14 mesh and concentrated on a Wilfley Table 3/. The concentrate was dried, weighed, and checked for radioactivity and fluorescence. The magnetic fraction was collected and weighed. The non-magnetic fraction was examined under a binocular microscope to identify heavy minerals (ilmenite, garnet, rutile, zircon, and apatite).

ACKNOWLEDGEMENTS

The author thanks the claimants in the area for their cooperation and especially Malcolm Figert for his files and a tour of the BMB No. 1 claim and Edward Seggerson for permission to visit his patented claims. John Benham, geologist, Michael Miller, physical scientist, and Bill Hale, supervisory physical scientist, at WFOC ably assisted in the field.

1/ The elements reported and their lower detection limits are: antimony (0.25 ppm), arsenic (1 ppm), bismuth (0.25 ppm), cadmium (0.25 ppm), copper (1 ppm), gallium (0.5 ppm), gold (0.05 ppm), lead (1 ppm), mercury (0.1 ppm), molybdenum (0.1 ppm), palladium (0.1 ppm), platinium (0.25 ppm), selenium (1 ppm), silver (0.014 ppm), tellurium (0.5 ppm), tin (0.5 ppm), thallium (0.5 ppm), zinc (1 ppm).

2/ The elements reported and their lower detection limits are: antimony (5 ppm), arsenic (5 ppm), barium (20 ppm), bismuth (2 ppm), chromium (1 ppm), cobalt (1 ppm), copper (1 ppm), gold (5 ppb), lead (5 ppm), manganese (1 ppm), mercury (0.05 ppm), molybdenum (1 ppm), nickel (1 ppm), selenium (5 ppm), silver (0.1 ppm), tungsten (10 ppm), and zinc (1 ppm).

3/ Brand names are used for descriptive purposes only and are not intended as an endorsement by the U.S. Bureau of Mines.

GEOLOGIC SETTING

The following generalized geologic description of the area is extracted from Hanson (1962), Longwell (1963) and Volborth (1973). Figure 2 shows generalized geology of the study area.

The study area is within the Basin and Range physiographic province. The northeastern and northwestern part of the area is underlain by Precambrian gneiss, schist, and porphyritic granite. These rocks have been intruded by Tertiary granite, and pegmatitic and rhyolitic dikes. The core of the area is composed of rapakivi and muscovite granite, ignimbrite, andesite, and rhyolite, some of which are brecciated (fig. 2).

The Ireteba Peaks section of the Eldorado Mountain range is part of a horst that is about 7 mi long. The study area is part of a large block bounded on the north side by the left-lateral, strike-slip Nelson fault zone and on the south side by the Searchlight left-lateral(?), strike-slip fault. Breccia composed of granitic, rhyolitic, andesitic, and ignimbritic rocks has been thrust from the east over the Tertiary granites. The Tule Springs fault is a normal fault trending northwesterly through the north part of the study area. With the exception of mineralized rock near the intersection of the Tule Springs fault and the horst bounding fault on the east side of Ireteba Peaks, the properties examined are near the contact between Tertiary(?) granitic rocks and Precambrian gneisses. Age dating and petrographic examination of the granitic rocks were not done for this study. Felsic intrusive rocks outcropping within the gneissic terrain were identified in hand specimen as mainly granite, with minor quartz monzonite, monzonite, and quartz diorite.

Volborth (1973, p. 15.) suggests that significant mineralization in the Nelson and Searchlight areas was mainly post-Miocene resulting from venting of hydrothermal fluids at the edge of fault blocks. While small granitic dikes in Precambrian gneiss commonly have associated base- or precious-metal mineralized rock, the large Tertiary granite plutons are barren.

MINING HISTORY

Eldorado Mining District

The Eldorado mining district, located to the north and northeast of the study area, was organized as the Colorado mining district in 1861, and has since been reported as the El Dorado, Eldorado Canyon, and Nelson mining districts (Raymond, 1872, p. 266; Carlson, 1974, p. 106). When gold was first discovered in the area, it was part of the New Mexico Territory. This area, which for a short time was included in Pah-ute County, Territory of Arizona, became part of Lincoln County, Nevada in 1866. Lincoln County was divided into two counties in 1908, with this region being part of the newly formed Clark County (Hansen, 1962, p. 185). This resulted in the mining records being located in three different courthouses.

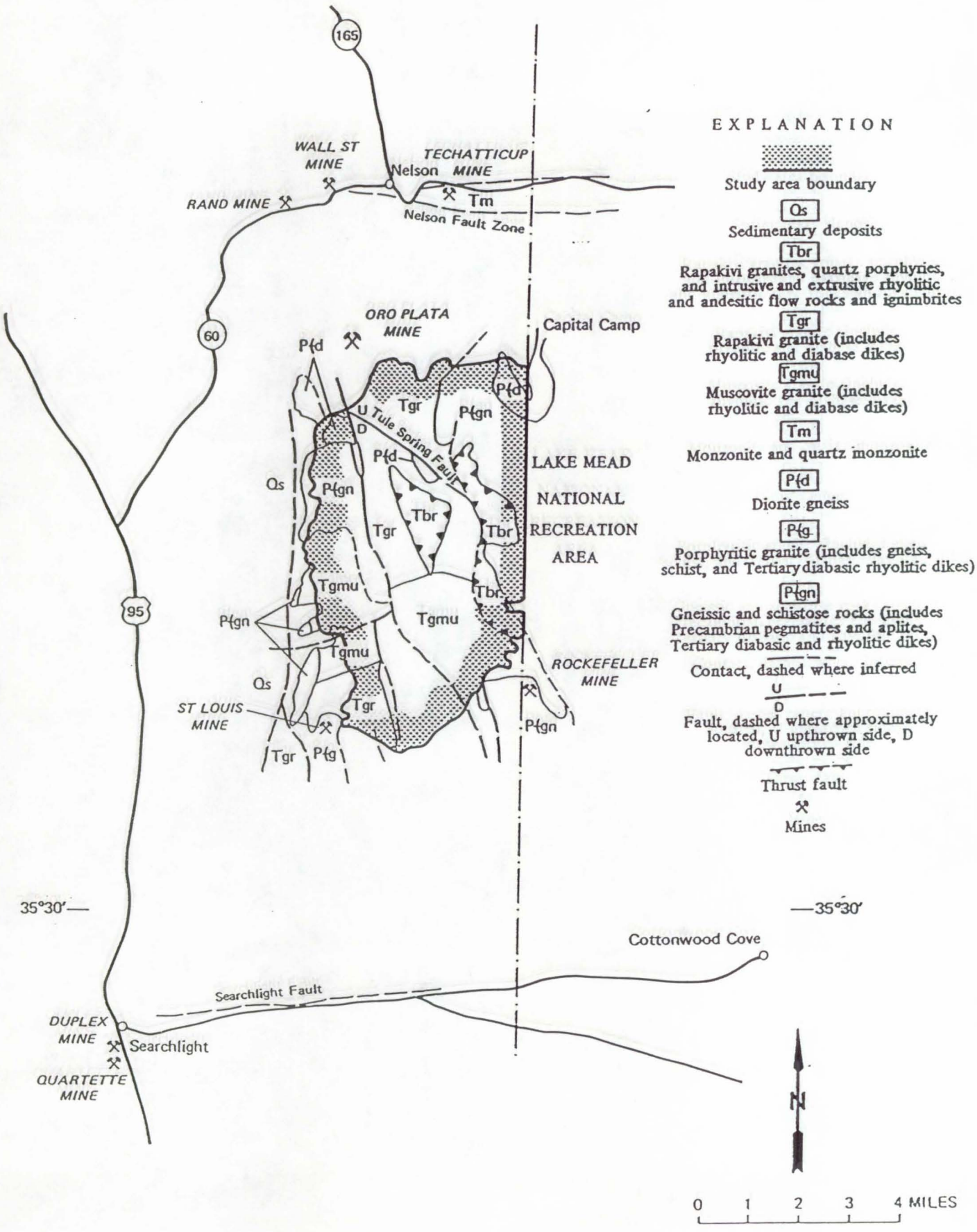


FIGURE 2.– Generalized geologic map, modified from Hansen (1962) and Volborth (1973), showing geology of Ireteba Peaks study area and other major structural features in the vicinity

The first recorded discovery of gold and silver was either at the present site of the Techatticup mine in 1857 by soldiers from Fort Mohave (Hansen, 1962. p. 218) or on the Honest Miner claim, now part of the Rand (or Eldorado Rand) property (Vanderburg, 1937, p. 26). The first mine developed (in 1863) was the Techatticup (Tekehetukup), the biggest producer in the district. Mining in the district has occurred, with some breaks, to the present time. In the 1980's, several major mining companies staked a few claims on unclaimed land in the area. In 1988, gold exploration and pilot mill development were occurring at Capital Camp in Lake Mead National Recreation area on patented claims by Mining and Milling Corporation of America. Also, a small heap leach was being operated by the owners of the Wall Street mine and on the Techatticup mill tailings by Canyon Mining.

There are no production records from the district between 1863 and 1874. Yearly production records are found in Director of the Mint (1884. p. 535-536; 1888, p. 218; 1889, p. 148; 1890, p. 174; 1891, p. 158; 1892, p. 206; 1893, p. 148), Yale (1908, p. 366), and Heikes (1911, p. 500; 1912, p. 699; 1913, p. 786; 1914, p. 818; 1917, p. 627; 1919, p. 470-471; 1921a, p. 266; 1921b, p. 231; 1922, p. 386-387; 1928, p. 676; 1931, p. 455; 1932, p. 652; 1933, p. 531; and 1934, p. 613) and Gerry (1929, p. 530). Some of the production from the district was reported for the years 1874 through 1897 (Couch and Carpenter, 1943). Hansen (1962, Table X) compiled production records from these and other sources for the years 1874 through 1945. Longwell and others (1965, p. 117) included data to 1961. There are small differences between the production figures reported by the various authors and also with the USBM production records. Even with the discrepancies, the value of ore produced since 1874 exceeded $6 million. Although early records of actual metal produced are not available, production from 1907 to 1981 was at least 98,285 oz gold; 2,264,528 oz silver; 167,893 lb lead; 38,623 lb copper; and 13,898 lb zinc.

Detailed histories of the Eldorado mining district, albeit not always in complete agreement, can be found in Vanderburg (1937, p. 26-34), Hansen (1962, p. 182-205), and Longwell and others (1965, p. 116-122). Other historical information on the district can be found in Browne (1868, p. 429), Raymond (1872, p. 266; 1873, p. 186), Hillen (1909, p. 1025-1028), The Mining World (1908a, p. 72; 1908b, p. 460; 1910, p. 724), Ryan (1911, p. 14; 1913, p. 15), Lincoln (1923, p. 19-20), Gallagher (1941a, p. 6; 1941b, p. 5), Ashbaugh (1959a, p. 22-23; 1959b, p. 47-48; 1959c, p. 30-31; 1959d, p. 30-31), and Swart (folders 182, 366, 463, 503).

Searchlight and Newberry Mining Districts

The Searchlight mining district is located on the south and west sides of the study area. The first discovery was in 1897 when the Searchlight vein was found on the Duplex property just southwest of the town of Searchlight (Callahan, 1939, p. 149-150). Production from the district continued until at least 1962, although little ore was produced after 1954. Total production, largely in gold, was estimated to be about

$7 million (Longwell and others, 1965, p. 112), although between 1897 and 1902 there are no records. About $4 million came from two mines, the Duplex and Quartette (USBM production records).

The Newberry mining district is not well defined. Although it mainly covers claims located in the Newberry Mountains southeast of the study area, there is some overlap with the Searchlight district. Production in this district, formed in the 1860's, has probably been less than $200,000 in gold and silver. The properties around Dupont Mountain, near the southeast edge of the study area, have been included both in reports of the Newberry district (Longwell and others, 1965, p. 142,) and the Searchlight district (Vanderburg, 1937, p. 78). Also, the St. Louis mine, near the southwest corner of the study area, is listed in descriptions of the Newberry district.

MINES AND PROSPECTS

Thirteen mines and prospects in and near the study area were examined during this investigation (fig. 3). All of the properties are either outside of or on the study area border; claims or prospects extend into the interior at the AJ #1, Crystal Lode, Five Spot, H & E, and Cobalt claims. No elements were above expected normal distribution for samples analyzed at the AJ #1, Crystal Lode, and Five Spot claims. The H & E claims, Cobalt, BMB No. 1, and Sazarac claims are described below; table 1, summarizing information on all properties examined during this study, is found on pages 20 - 23. Sample locations and analytical results for all properties are reported in the appendix.

H & E Claims

The H & E claims, located on the west boundary of the study area, were briefly mentioned by Garside (1973, p. 38). A location notice, only part of which was legible, found during this investigation called one claim the Doodle Bug. In 1988, the claims apparently were not owned. Access is by dirt road, 6 mi from U.S. Highway 95. The property is at about 3,800 ft elevation.

Garside (1973, p. 38) reported anomalous radioactivity in the Precambrian rocks. No other information was found regarding these claims. The workings are too small to indicate any production from this property.

The claims cover Precambrian gneiss that contains pods of malachite and chrysocolla. Copper minerals are exposed in small pods as much as 5 ft in diameter and of unknown vertical extent within an area about 800 ft long by 100 ft wide. Iron-oxide minerals usually accompany the copper minerals which are mainly in the quartzose part of the gneiss. The closely spaced pods both follow and crosscut the foliation, possibly related to small faults in the gneiss. Foliation of the gneiss is highly deformed, probably the result of several periods of tectonic activity. Mafic dikes are present throughout the area, but do not seem related to mineralization.

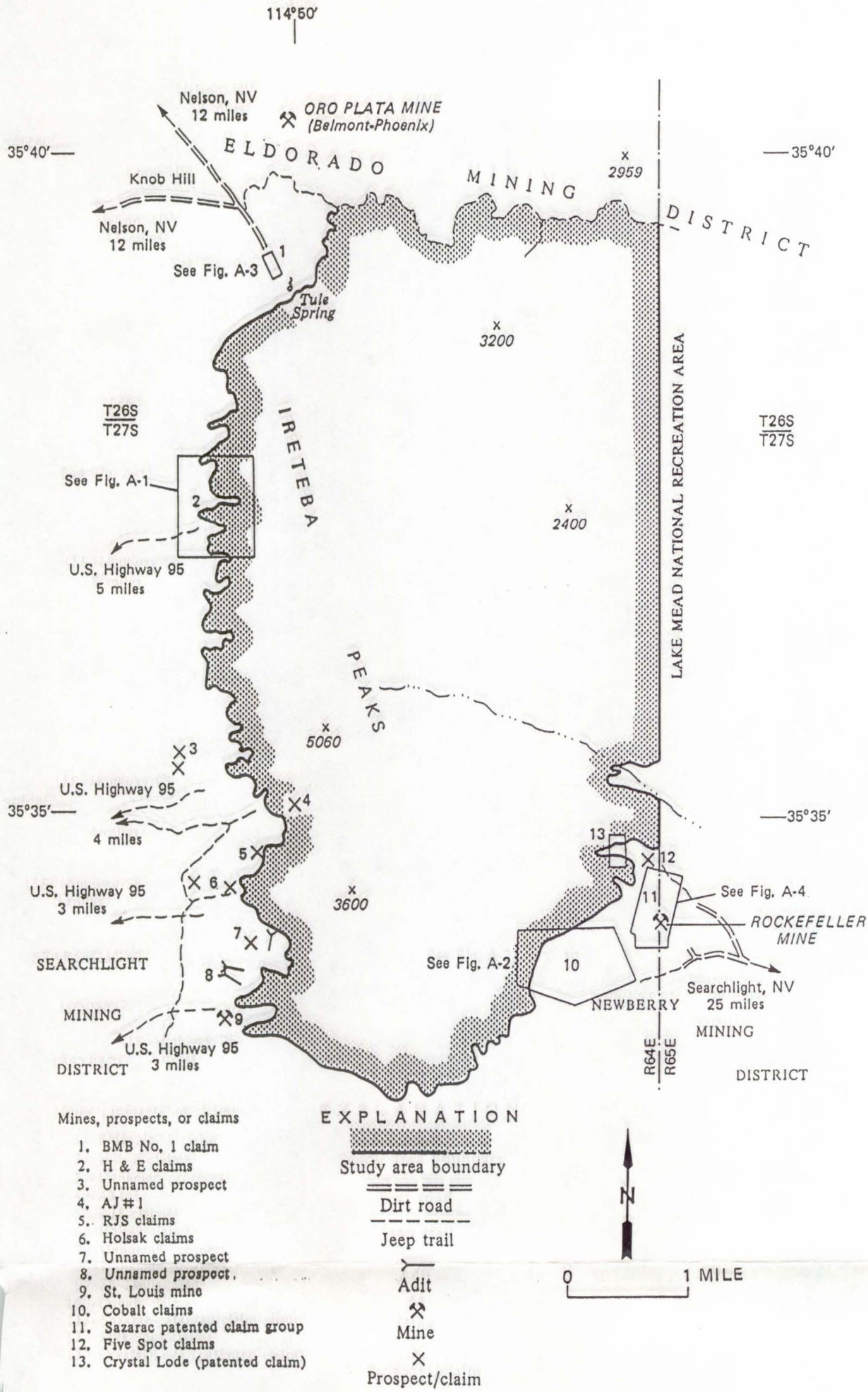


FIGURE 3.– Location of mines, prospects, and claims in and near the Ireteba Peaks study area, Clark County, NV

The area was examined with a scintillometer. No radiation above normal background was noted during this examination of the property.

Workings include one shaft that is at least 31 ft deep, a 20-ft-long adit, and eight prospect pits which occur both inside and outside of the study area boundary.

Eleven samples were taken (fig. A-1 and tables A-1 and A-2, nos. 23-33). Several select samples were taken of stockpiled copper-rich material on dumps of workings. Samples outside of the study area contained as much as 9 percent copper, 0.04 oz/t gold, and 0.11 oz/t silver. Two samples of pegmatite within Precambrian gneiss in the study area (table A-2, nos. 25, 31) contained 0.06 and 0.045 ppm gold.

Cobalt Claims

The 36 Cobalt claims were located in 1983 within and beyond the southeastern boundary of the study area, and are owned by Leonard Phillips, of Las Vegas, NV. Access to these claims is by paved road for 7 1/2 mi east from Searchlight, NV, then north for 11 1/2 mi on graded dirt roads (fig. 1) to the east side of the claim block. From the paved highway, it is 2 1/2 mi of graded dirt road and 5 mi up a dry wash to the west side of the claim block. Elevations on the claims range from about 2,000 to 3,200 ft.

Workings in this area obviously predate these claims, but little is known about them. A group of claims, including the April Fool No. 1 and Tip Top were located in the southwest quarter of section 25 in 1938. However, it is likely that miners were active here when the Sazarac patented claim group was being explored and developed. No production from these workings is reported and their size indicates only a small amount of ore could have been produced.

The claims cover intermixed gneiss-schist of Precambrian age, granite-quartz monzonite (age unknown) heavily stained with red iron-oxides, and Tertiary granites. Faults and associated veins contain lead and zinc at the surface. Barite and quartz are common gangue minerals in the veins. Faults trend approximately N. 55° E., N. 75° E., N. 75° W., and N. 55° W.

The largest vein on the claims is about 2700 ft long trending about N. 40° W. (fig. A-2). Gold was present in samples 61 through 66. The north end of the vein pinches out before entering the study area and no gold was present in the northermost sample of the vein (fig. A-2, no. 60).

There are six shafts (9, 31, 34, 35, 41, and 89 ft deep), three adits (52 and 150 ft long, a third adit was not entered), and six prospect pits that were examined near the border of the study area.

Twenty-one rock samples were taken (fig. A-2 and tables A-3 and A-4, nos. 55-75). One select sample in the study area (table A-4, no. 56) contained 6.57 ppm (0.192 oz/ton) gold and 5.56 ppm (0.162 oz/ton).

silver. Another sample contained 6.96 ppm (0.203 oz/ton) silver, 0.96 percent lead, and 0.43 percent zinc. The maximum cobalt value was 20 ppm, the remainder ranged from 1 to 19 ppm.

BMB No. 1 Claim

The BMB no. 1 claim is owned by Malcolm L. Figert, Las Vegas, NV. It is located outside the northwest edge of the study area (fig. A-3 and fig. 3, no. 1). The claim, accessed by dirt and gravel roads, is about 12 mi south of Nelson, NV at 4,200 ft elevation.

The U. S. Geological Survey topographic map (Ireteba Peaks 7.5°) shows the area as being the Belmont-Phoenix mine. However, this is probably incorrect. This is an error probably carried over from Longwell and others (1965, plate 1, no. 195). They show the Belmont-Phoenix mine at this site, but the alternate name used for it is the Oro Plata which is situated about one mi north of this property.

Production from the Belmont-Phoenix is listed as 75,906 oz silver, 286 oz gold, 7,785 lb lead, and 502 lb copper in 1940 and 1941 (Longwell and others, 1965, p. 180). While the BMB property may have produced a minor amount of silver ore, the workings do not appear sufficient to have produced that quantity of ore considering the grade obtained from samples on the property during this study.

Another reason to question the previous reports that described this property as the old Belmont-Phoenix mine is the difference in geology. The Belmont-Phoenix mine is described as quartz veins in Precambrian rocks (Longwell and others, 1965, p. 180). The mineralized rock on this property consists dominently of tan calcite veins with minor quartz within a fault zone containing minor copper, lead, and zinc oxides with associated silver. The host rocks are dominantly unaltered granite.

The mineralization occurred in a brecciated zone, which is as wide as 100 ft, over 900 ft long, and varies in orientation from northerly to northwesterly. The breccia zone is narrow at sample site 1, and expands to about 18 ft at site 4, about 40 ft at site 8, 68 ft at site 14-16, and 100 ft at site 19-21. Just south of site 19-21 surface exposure of the breccia zone is terminated at Tule Springs and a southeasterly trending stream valley. This breccia zone may be at the intersection of the Tule Springs fault and a normal northerly-trending horst-bounding fault mapped by Volborth (1973, plate 1).

On the property, there are four adits (144, 119, 11, and 10 ft long), two shafts (16 and 8 ft deep), one 40-ft-long trench, two prospect cuts, and two pits (fig. A-3). Twenty-one rock samples were taken from the claim and one alluvial pan sample was taken downstream from the claim. Sample results for the rock samples are shown in tables A-5 and A-6. The alluvial pan sample contained no heavy minerals of economic importance. Silver content was as high as 19.4 oz/ton in one chip sample. The small amounts of lead, zinc, copper, and gold in the samples would not increase the value of the rock significantly.

Sazarac Patented Claim Group

The Sazarac patented claim group consists of seven claims. These include the Sazarac, Rainbow, Crysocolla, Maine, Copper Queen, Copper Carbonate, and Bornite. The main shaft is known as the Rockefeller mine. These claims, patented in 1913 (M.S. 4071), are owned by Edward Seggerson, Jr. of Las Vegas, NV. The claims are located southeast of the study area on the border with Lake Mead National Recreation Area (fig. 2, no. 11). Access to the area is by paved road for 7 1/2 mi east from Searchlight, NV, then north for 11 1/2 mi on graded dirt roads.

The early history of these claims is not recorded. The mineral survey was done in 1912. With the exception of a bulldozer scrap found at the common corner of the Crysocolla, Rainbow, Copper Queen, and Maine claims; all of the workings on these properties were present in 1912. The shafts are now inaccessable and the other workings are minor. The only production record is for the Big Shot claim which Vanderburg (1937, p. 78) lumps with the Sazarac patented claim group as being part of the Camp Dupont group. The Big Shot had 35 tons of ore (presumably gold) produced in 1936. Production for the Newberry mining district is listed as less than $200,000; although which mines produced this value are not recorded. Stoping observed in the main workings on the Bornite claim indicates that there was some production from this property.

The claims cover a Precambrian block of gneiss and schist with small bodies of granitic to quartz monzonitic intrusives. Many small quartz veins and red iron-oxide stained faults and fractures are present throughout the claims. There are two main workings. One shaft is on a northerly trending stucture and the other shaft on a westerly trending shear zone. These zones are as thick as 10 ft and of unknown extent. Chrysocolla and malachite are common copper minerals in the shear zones. There is also free gold. The gangue is mainly quartz and cryptocrystalline quartz with some barite. Also, the granitic rocks contain weakly disseminated copper minerals associated with possible argillic alteration in the northeast corner of the Crysocolla claim.

Most of the workings descriptions are taken from the Mineral Survey notes (Brown, 1912). The depth of the shafts and length of underground workings are quoted from Brown (1912). There is one adit (58 ft long) and 15 shafts (5, 6, 8, 8.5, 9, 4 - 10's, 17, 42, 92, 103, 141, and 216 ft deep). The 216-ft shaft had 516 ft of underground workings, the 141-ft shaft had 24.5 ft of underground workings, and the 92-ft shaft had 53 ft of underground workings. The 42- and 103-ft shafts were inaccessible in 1912, but were thought by the surveyor to contain underground workings also. There were also 25 open cuts and pits. There is open stoping on the Bornite claim between two adjoining shafts which may post-date the mineral survey. There is also one bulldozer scrape about 30 ft wide by 100 ft long in the northeast corner of the Crysocolla claim.

Eighteen rock samples were taken from the claims (fig. A-4, tables A-7 and A-8). Three of the samples fire assayed for gold contained 7.55, 0.761, and 0.725 oz/t (nos. 77, 78, 80). These samples also contained silver and copper. Because these samples were either select or taken at the collar of a shaft on the main vein structure, they are thought to represent ore that was mined.

APPRAISAL OF MINERAL RESOURCES

Of the thirteen properties examined during this investigation, no mineral resources were identified in the Ireteba Peaks study area. The resources identified are all outside of the study area boundary. Of the properties investigated, no resources were projected to extend into the area; although it is possible that there are resources south of the BMB No. 1, on the east side of the H & E, and on the north side of the Cobalt and Sazarac claims. Most base and precious metal deposits in the region are in Precambrian to Mesozoic age igneous and metamorphic rocks which outcrop outside or on the borders of the study area. Within the area studied, Tertiary age igneous rocks are dominant. The age of the mineralizing event(s) was not determined in this study and the source of the metal-rich fluids which deposited the ore bodies is unknown.

The H & E claims cover a wide area of mineralized Precambrian gneiss similar to other prospects in the Searchlight and Eldorado mining districts. No well-defined vein structure was observed. Copper-, gold-, and silver-bearing rock is distributed irregularly within part of the Precambrian gneiss which underlies the claims. Apparently, mineralized rock is not present in younger formations in this area. Further exploration, including locating faults and other structures which could have controlled mineralization, is necessary. It is possible this mineralized area extends into the study area below the surface, but no evidence was found during this investigation.

The Cobalt claims are predominately outside of the study area. There are about 240,000 tons of identified subeconomic resources containing .037 oz/t gold and .12 oz/t silver in the main vein, which is about 2 ft thick. Gold occurs over at least 1400 ft of the total length of the vein and is estimated to be 700 ft deep for resource calculations. Other widely scattered faults are not as long and contain low-grade, metal-bearing material. Gold, silver, lead, and zinc are the major metal constituents of these veins, although copper-bearing minerals are also present in the Precambrian rocks and associated granite-quartz monzonite. The Tertiary granites which are in contact with gneiss apparently do not host the metal-bearing minerals. In addition to vein deposits, it is possible a bulk tonnage, low-grade precious and base metals deposit could be defined in the Precambrian rocks south of the contact with the Tertiary granitic rocks on the border of the study area.

The BMB No. 1 contains about 40,000 tons of demonstrated subeconomic resources and 130,000 tons of inferred subeconomic resources with an average grade of 0.41 oz/t silver. Resources were determined by using polygons on a vein which averages 5.6 ft thick and is 920 ft long over a

projected vertical extent of 460 ft (half of the known strike length of the vein). Areas were digitized from field maps and volumes computed using Simpson's rule. Grade was determined by calculating volume-assay tonnage using sample assays. Sampling on the surface was difficult and leaching is probable since no sulfide minerals were seen. Analyses indicate that lead, zinc, copper, gold, and molybdenum are present in unusually high concentrations in the surface samples. The mineralized breccia zone is large enough to warrant further detailed examination. Because the mineralization was similar to that in the Eldorado mining district, it is possible that an ore body could occur on the BMB No. 1 claim. More detailed examination of this claim and the area to the south is necessary to determine if a mineral resource occurs in the study area.

The Sazarac patented claim group is private land outside of the study area. An economic deposit of gold with minor silver and copper is possible as one sample contained more than 7 oz/t gold. The main workings are inaccessible. It is probable that with the exception of unmined pillars, the miners probably removed all of the high grade material that they could find. The area should be examined for both high grade gold and porphyry-type copper deposits.

Vanderburg (1937, p. 77) reported "lessees produced ore valued at $22,000" from the St. Louis group. There is very little information published on the St. Louis mine, although extensive mining has occurred. Surficial sampling indicates that ore-grade gold was present at the mine. While there is no indication that mineralized rock extends into the study area, additional gold reserves may be present on the property.

Other properties examined in this investigation were outside of the area and no structures, favorable geology, analytical data (fig. A-5, table A-9), or other positive information was obtained to indicate the presence of base or precious metal mineral resources that could extend into the study area.

Beryl has been reported as occurring in a pegmatite near the west edge of the study area (Olson and Hinrichs, 1960, p. 187), but was not found by those authors, a previous USBM sampling program (unpublished files) nor this author. Pegmatites in the area are small. No beryl has been found in other pegmatites in the area. Beryl may occur at depth in these pegmatites, but at present no resources were identified.

Although radioactive anomalies have been reported on the west edge of the study area, no strong radioactivity was noted during this investigation. A Geometrics Model GR-101A scintillometer [3/] used during this examination did not read over 150 cps on any traverse and generally measured 50 to 75 cps. It is assummed that the previously reported deviations were caused by variations in rock type, age, and terrain effects.

Sand and gravel are present in washes that drain the study area, and in alluvial pediments outside of the study area adjoining Highway 95 on the west and Lake Mohave on the east. Any demand for sand and gravel could be satisfied from sources outside the study area. One alluvial sample contained no gold or other economic minerals.

RECOMMENDATIONS

Although surface exposures of mineralized rock apparently do not extend into the study area, additional mapping and sampling and subsurface examinations are necessary at the BMB No. 1 claim and H & E claims to determine if the mineralized structures extend into the study area.

South of the BMB No.1 alluvial deposits cover the projection of the mineralized structure. The results of this survey indicate that additional studies of the property should be done. Needed are geophysical evaluations of the area to determine the extent and configuration of the brecciated zone, and intensive sampling of the exposed breccia zone, possibly including drilling. In addition, a preliminary soil survey and detailed mapping of alluvium and colluvium are necessary to determine if a grid soil survey could be used to delineate extensions of the mineralized rock beyond areas of outcrop.

Sampling indicates that high grade gold ore has been found on the Sazarac claims and it is possible that other buried ore bodies are still present. In addition, the copper, lead, and zinc contents, the rock types, alteration, and structural preparation of the area suggest that a porphyry copper type deposit is possible. Further exploration for these types of deposits is recommended on this property.

Sampling of workings on the Cobalt claims did not delineate any deposits. However, gold and silver values in several spots indicates the possibility for an ore deposit. Subsurface vein deposits are also possible. An extensive soil and rock geochemical sampling program along with geophysical exploration techniques are recommended for this area.

TABLE 1.--Mines, claims, and prospects in and near the Ireteba Peaks study area, Clark County NV

(*, outside study area)

No.	Name	Summary	Workings and production	Sample and resource data
1*	BMB No. 1 claim (Belmont-Phoenix?)	A breccia zone with red calcite and quartz cement in granite is as thick as 100 ft and can be traced about 1,000 ft. Silver minerals occur in this zone which is bordered by granite and volcanics. The vein is near or at the intersection of the Tule Springs fault with a north-trending normal fault which forms the east boundary of the Ireteba Peaks horst block. Small quantities of lead, zinc, and copper-bearing minerals are present in this zone. Silver-bearing minerals are found throughot the zone, but seem to be more concentrated in the narrower portions.	Four adits (10, 11, 119, and 144 ft long), two shafts (8 and 16 ft deep), a 40 ft long trench, two prospect pits, and two open cuts. No production.	Of the 17 chip, 2 select, 1 grab, and 1 random chip samples, silver ranged from less than 0.1 ppm to 665 ppm (19.4 oz/ton), copper from 6 to 405 ppm, lead from 24 to 4,522 ppm, and zinc from 59 to 4,478 ppm. The mineralized rock is in a breccia zone that either follows a fault or forms a pipe-like body. Surface indications are that the breccia zone is less than 1,000 ft long and as much as 100 ft at its widest part. There are 40,000 t of demonstrated subeconomic resources and 130,000 t inferred subeconomic resources grading 0.41 oz/t silver. Additional studies of this property are warranted along with examining possible extension into the study area.
2	H & E claims (Doodle Bug)	Country rock is Precambrian gneiss with a few mafic dikes. Some pegmatite is also present. Copper oxide is in N. to N. 20° E. trending shear zones that are 1 to 3 ft thick. Copper-bearing rock is sporadic and possibly related to the west boundary fault on the Ireteba Peaks horst block of Volborth (1973, plate 1). Garside (1973, p. 38) reported anomalous radioactivity, but none was noted with a scintillometer used during this study.	Eight prospect pits, a 27-ft-long adit, and a 31-ft-deep shaft. No production.	Five chip and six select samples were taken. Hand selected vein material had as much as 9% copper and 0.11 oz/ton silver. Another sample had 1.8% copper and 0.04 oz/ton gold. Copper content was as low as 13 ppm in a prospect pit. Two samples from pegmatite zones in gneiss in the study area had 0.06 and 0.045 ppm gold. There are several small discontinuous pods of copper-gold-silver-bearing material over an area about 100 ft wide by 800 ft long. Additional exploration is recommended to define resources and possible extensions into the study area.
3*	Unnamed prospect	The working is on a 0.5- to 2-ft-thick shear zone in argillized granite. The shear strikes N. 45° E. and dips 32° SE. Minor malachite is in the shear zone.	One 25 ft long adit. No production.	Two chip samples taken. No assay results have economic importance.

TABLE 1.--Mines, claims, and prospects in and near the Ireteba Peaks study area, Clark County NV--Continued

No.	Name	Summary	Workings and production	Sample and resource data
4	AJ #1	Country rock is granite that is highly fractured and stained with red iron oxides at the workings.	Three 3-ft-diameter by 2-ft-deep prospect pits and a 1-ft-wide by 30-ft-long by 1-ft-deep trench all within 50 ft of each other. No production.	One random chip sample taken. No assay results had economic importance.
5*	RJS claims	Alluvial valley fill; no bedrock exposed. Boulders include gneiss, granitics, diabase, and rhyolite.	One shaft, 6 ft by 6 ft by 30 ft deep. No production.	One grab sample of various rock types from the dump. No assay results had economic importance.
6*	Holsak claims	Claims cover an area that includes north-trending pegmatite dikes which reportedly contain minor beryl (U.S. Bureau of Mines, 1962, unpublished report). No beryl was seen in this study or a study by Olson and Hinrichs (1960). Two main lens-shaped dikes were examined. The south dike is as much as 20 ft wide by 200 ft long and the north dike is as much as 40 ft wide and 200 ft long. Dikes are zoned, with beryl reported in the wall zone with albite, quartz, mica, and garnet. The dikes are in Precambrian granitics and gneiss.	Four prospect pits, including a 25-ft-long by 10-ft-wide by 8-ft-deep pit and two shafts (depth unknown, inclined 65° E. and 65°W. No production.	Channel samples taken in 1962 by George Holmes, Jr., U.S. Bureau of Mines Mining Engineer, had no beryllium oxide. Two grab, two select, two random chip, and one chip sample were taken. The samples contained as much as 0.414 ppm gold, 5.26 ppm silver, 1,244 ppm copper, and 7.9 ppm beryllium. This property is classified as an occurrence.
7*	Unnamed prospect	Workings are in gneiss. Adit cuts north-trending andesite (?) dike. There is some brecciation along the contact between these two rock types.	A prospect pit and a 67-ft-long adit. No production.	Four chip samples taken. No assay results had economic importance.
8*	Unnamed prospect	Workings are in granite and a rhyolite (?) dike. Inclusions of gneiss occur in the granite.	Two adits (26 ft and 160 ft long). No production.	Of two chip, one random chip, and one select samples taken, the highest assays were 0.29% copper and 0.07 oz/ton silver. This property is classified as an occurrence.

TABLE 1.--Mines, claims, and prospects in and near the Ireteba Peaks study area, Clark County NV--Continued

No.	Name	Summary	Workings and production	Sample and resource data
9*	St. Louis mine	Mine briefly visited because of proximity to study area. Quartz veins contain hematite pseudomorphs after pyrite. Minor malachite and boxwork gossan was mined. Vein strikes N. 35° W. Country rock is quartz monzonite, some is fine grained.	Workings were not examined, but there are several underground levels connected by raises or winzes. Production of $22,000 in gold in 1936 was reported by Vanderburg (1937, p. 77). U.S. Bureau of Mines records indicate at least $15,000 in gold was extracted at other times between 1921 and 1948. Minor silver was also recovered.	Two select samples taken. Gold and silver are present in dump samples which contained 0.38 oz/ton gold and 0.15 oz/ton silver in one sample and 0.25 oz/ton silver in the other sample. The vein has been extensively stoped. This property was not classified in this study, but appears to be worth investigating for precious metal resources.
10	Cobalt claims	The claims cover intermixed Precambrian gneiss and granite-quartz monzonite as young as Tertiary. Workings commonly are on faults and veins with heavy red iron-oxide stain and boxwork structure. Many veins have barite, calcite, and quartz gangue minerals with lead and zinc oxides. Fault/vein orientations are N. 55° E., N. 75° E., N. 55° W., and N. 75° W.	Six shafts (9, 31, 34, 35, 41, and 89 ft deep), three adits (52 and 150 ft long; and one adit not entered) and nine prospect pits. No known production.	Of 7 select and 14 chip samples, zinc ranged from 65.7 to 4,336 ppm, gold content was as much as 6.57 ppm (0.19 oz/ton), lead ranged from 13 to 9,300 ppm, and copper ranged from 8.03 to 503 ppm. All mineralized rock is in Precambrian terrane on the south edge of the study area. There are 240,000 tons of identified subeconomic resources grading 0.037 oz/t gold and .12 oz/t silver. Further exploration of the Precambrian terrane is warranted.
11*	Sazarac patented claim group, M.S. 4071 (Rockfeller mine)	The area is dominantly underlain by Precambrian gneiss with small areas of granite-quartz monzonite. Veins with quartz and massive hematite were worked. The region is intensely fractured. Chrysocolla and malachite with free gold constitute the ore minerals; quartz and barite are the predominant gangue. Chrysocolla is disseminated in argillically altered granitic rocks and a major constituent of the vein deposits.	Twenty-five prospect pits, a 58-ft-long adit, and fifteen shafts (5, 6, 8, 8.5, 9, 4-10's, 17, 42, 93, 103, 141, and 216 ft deep). There are at least 593 ft of drifts and crosscuts in the shafts. Amount of production is not recorded.	Of 6 select, 1 random, and 11 chip samples, gold content was as much as 7.577 oz/ton, copper ranged from 13.4 ppm to 3.06%, and zinc ranged from 12.3 to 1,038 ppm. Silver content was as much as 6 ppm. Mineralized rock includes sheared gneiss and granitic rocks. There are both vein deposits and possible disseminated deposits. Extensive mining appears to have removed high grade gold deposits, but there may hidden vein deposits or a low grade copper-gold porphyry deposit. This examination indicates that extensive exploration of this property is warranted.

TABLE 1.--Mines, claims, and prospects in and near the Ireteba Peaks study area, Clark County NV--Continued

No.	Name	Summary	Workings and production	Sample and resource data
12	Five Spot claims	The claims cover granite, and diorite, cut by diabase dikes. Workings are in red iron oxide-stained areas.	Three small prospect pits. No production.	Of two grab and one chip samples taken, no assay results had economic importance. Most of the area is underlain by Tertiary granitic rocks or alluvium. The most favorable exploration site would be where the claims adjoin the Sazarac patented claim group. This is classified as a base- and precious-metal occurrence.
13	Crystal Lode (patented claim M.S. 070)	The property covers granite, and gneiss cut by diabase dikes. No mineralized rock or alteration was seen, although the Precambrian terrain is considered a favorable mineral environment in this area.	Three prospect pits. One short shaft described in the mineral survey notes is completely full of alluvium. No production.	Two random chip samples taken. No assay results had economic importance.

REFERENCES

Ashbaugh, Don, 1959a, No. 190 in a series-Eldorado, part 1, in Ghost towns of Nevada: Las Vegas Review Journel, Sept. 20, p. 22-23.

_____, 1959b, No. 191 in a series-Eldorado, part 2, in Ghost towns of Nevada: Las Vegas Review Journel, Sept. 27, p. 47-48.

_____, 1959c, No. 192 in a series-Eldorado, part 3, in Ghost towns of Nevada: Las Vegas Review Journel, Oct. 4, p. 30-31.

_____, 1959d, No. 193 in a series-Eldorado, conclusion, in Ghost towns of Nevada: Las Vegas Review Journel, Oct. 11, p. 30-31.

Bowyer, Ben, Pampeyan, E. H., and Longwell, C. R., 1958, Geologic map of Clark County, Nevada: U.S. Geological Survey Map MF-138, scale 1:200,000.

Bracken, R.E., and Kane, M. F., 1982, Bouguer gravity map of Nevada - Kingman sheet: Nevada Bureau of Mines and Geology Map 75, 1:250,000 scale.

Brown, W. M., 1912, Mineral survey no. 4071, field notes of the survey of the mining claim of A. H. Wallace known as the Sazarac, Rainbow, Crysocolla, Bornite, Maine, Copper Queen, and Copper Carbonate Lodes: on file at the U. S. Bureau of Land Management, Nevada State Office, Reno, NV, 16 p.

Browne, J.R., 1868, Mineral resources of the States and Territories west of the Rocky Mountains: Government Printing Office, Washinton, D. C., 674 p.

Callaghan, Eugene, 1939, Geology of the Searchlight district, Clark County, Nevada: U.S. Geological Survey Bulletin 906-D, 188 p.

Carlson, H. S., 1974, Nevada place names: University of Nevada Press, Reno, Nevada, 282 p.

Couch, B. F., and Carpenter, J. A., 1943, Nevada's metal and mineral production (1859 - 1940, inclusive): University of Nevada Bulletin, v. XXXVII, no. 4, 159 p.

Director of the Mint, 1884, Report of the Director of the Mint upon the statistics of the production of precious metals in the United States: Government Printing Office, Treasury Department, 858 p.

_____, 1888, Report of the Director of the Mint upon the statistics of the production of precious metals in the United States: Government Printing Office, Treasury Department, 375 p.

_____, 1889, Report of the Director of the Mint upon the statistics of the production of precious metals in the United States: Government Printing Office, Treasury Department, 246 p.

Director of the Mint, 1890, Report of the Director of the Mint upon the statistics of the production of precious metals in the United States: Government Printing Office, Treasury Department, 296 p.

_____, 1891, Report of the Director of the Mint upon the statistics of the production of precious metals in the United States: Government Printing Office, Treasury Department, 278 p.

_____, 1892, Report of the Director of the Mint upon the statistics of the production of precious metals in the United States: Government Printing Office, Treasury Department, 321 p.

_____, 1893, Report of the Director of the Mint upon the statistics of the production of precious metals in the United States: Government Printing Office, Treasury Department, 260 p.

Gallagher, P. J., 1941a, Past, present history of famed Eldorado Canyon in Clark County: Las Vegas (Nevada) Evening Review-Journal, Jan. 23, p. 6.

_____, 1941b, Past, present history of famed Eldorado Canyon in Clark County: Las Vegas (Nevada) Evening Review-Journal, Jan. 28, p. 5.

Garside, L. J., 1973, Radioactive mineral occurrences in Nevada: Nevada Bureau of Mines and Geology Bulletin 81, 121 p.

Gerry, C. N., 1929, Gold, silver, copper, lead, and zinc in Nevada, in Mineral resources of the United States, 1926, part I-metals, p. 511 - 558.

Hansen, S. M., 1962, The geology of the Eldorado mining district, Clark County, Nevada: University of Missouri PhD dissertation, 262 p.

Heikes, V. C., 1911, Nevada, in Mineral resources of the United States, calendar year 1910: U.S. Geological Survey, p. 498-534.

_____, 1912, Nevada, in Mineral resources of the United States, calendar year 1911: U.S. Geological Survey, p. 646-702.

_____, 1913, Nevada, in Mineral resources of the United States, calendar year 1912: U.S. Geological Survey, p. 773-818.

_____, 1914, Gold, silver, copper, lead, and zinc in Nevada in 1913, in Mineral resources of the United States, calendar year 1913, part I-metals: U.S. Geological Survey, p. 803-844.

_____, 1917, Gold, silver, copper, lead, and zinc in Nevada, in Mineral resources of the United States, calendar year 1915, part I-metals: U.S. Geological Survey, p. 613-754.

Heikes, V. C., 1919, Gold, silver, copper, lead, and zinc in Nevada, in Mineral resources of the United States, calendar year 1916, part I-metals: U.S. Geological Survey, p. 457-500.

_____, 1921a, Gold, silver, copper, lead, and zinc in Nevada, in Mineral resources of the United States, 1917, part I-metals: U.S. Geological Survey, p. 253-298.

_____, 1921b, Gold, silver, copper, lead, and zinc in Nevada, in Mineral resources of the United States, 1918, part I-metals: U.S. Geological Survey, p. 217-264.

_____, 1922, Gold, silver, copper, lead, and zinc in Nevada, in Mineral resources of the United States, 1919, part I-metals: U.S. Geological Survey, p. 373-416.

_____, 1928, Gold, silver, copper, lead, and zinc in Nevada, in Mineral resources of the United States, 1925, part I-metals: U.S. Geological Survey, p. 675-699.

_____, 1931, Gold, silver, copper, lead, and zinc in Nevada, in Mineral resources of the United States, 1928, part I-metals: U.S. Geological Survey, p. 441-478.

_____, 1932, Gold, silver, copper, lead, and zinc in Nevada, in Mineral resources of the United States, 1929, part I-metals: U.S. Geological Survey, p. 637-673.

_____, 1933, Gold, silver, copper, lead, and zinc in Nevada, in Mineral resources of the United States, 1930, part I-metals: U.S. Geological Survey, p. 515-554.

_____, 1934, Gold, silver, copper, lead, and zinc in Nevada, in Mineral resources of the United States, 1931, part I-metals: U.S. Geological Survey, p. 601-632.

Hewett, D. F., Callaghan, Eugene, Moore, B. N., Nolan, T. B., Rubey, W. W., and Schaller, W. T., 1936, Mineral resources of the region around Boulder Dam: U.S. Geological Survey Bulletin 871, 197 p.

Hillen, A. G., 1909, Mining operations in Eldorado district, Nevada: The Mining World, p. 1025-1028.

Kantor, Tedral, 1961, Geology of the east-central portion of the Nelson quadrangle, Clark County, Nevada: University of Missouri Master's thesis, 80 p.

Lincoln, F. C., 1923, Mining districts and mineral resources of Nevada: Nevada Newsletter Publishing Company, Reno, Nevada, 295 p.

Longwell, C. R., 1963, Reconnaissance geology between Lake Mead and Davis Dam, Arizona-Nevada: U.S. Geological Survey Professional Paper 374-E, p. E1-E51.

Longwell, C. R., Pampeyan, E. H., Bowyer, Ben, and Roberts, R. J., 1965, Geology and mineral deposits of Clark County, Nevada: Nevada Bureau of Mines Bulletin 62, 218 p.

Luning, R. H., Penley, H. M., Johnson, C. L., and Dotterrer, F. E., 1982, National uranium resource evaluation, Kingman quadrangle, Arizona, Nevada, and California: U.S. Department of Energy PGJ/F - 137(82), 23 p.

Olson, J. C., and Hinrichs, E. N., 1960, Beryl-bearing pegmatites in the Ruby Mountains and other areas in Nevada and northwestern Arizona: U.S. Geological Survey Bulletin 1082-D, p. 135-200.

Qualheim, B. J., 1978, Hydrogeochemical and stream sediment reconnaissance basic data report for Kingman NTMS quadrangle, Arizona, California, and Nevada: U.S. Department of Energy GJBX - 122'78, 30 p.

Ransome, F. L., 1907, Preliminary account of Goldfield, Bullfrog, and other mining districts in southern Nevada: U.S. Geological Survey Bulletin 303, 98 p.

Raymond, R. W., 1872, Statistics of mines and mining in the States and Territories west of the Rocky Mountains: U.S. House of Representatives Executive Document no. 10, 42d Congress, 1st Session, 566 p.

_____, 1873, Statististic of mines and mining in the States and Territories west of the Rocky Mountains: U.S. House of Representatives Executive Document no. 210, 42d Congress, 3d Session, 550 p.

Ryan, Edward, 1911, Annual report of the State Inspector of Mines-1910: State of Nevada, 79 p.

_____, 1913, Annual report of the State Inspector of Mines-1912: State of Nevada, 79 p.

Smith, P.L., and Tingley, J. V., 1983, A mineral inventory of the Esmeralda-Stateline Resource Area, Las Vegas District, Nevada: Nevada Bureau of Mines and Geology Open-file Report 83-11, 173 p.

Spurr, J. E., 1903, Descriptive geology of Nevada south of the fortieth parallel and adjacent portions of California: U.S. Geological Survey Bulletin 208, 229 p.

Stewart, J. H., 1980, Geology of Nevada - a discussion to accompany the geologic map of Nevada: Nevada Bureau of Mines and Geology Special Publication no. 4, 136 p.

Stewart, J. H., and Carlson, J. E., compilers, 1978, Geologic map of Nevada: U.S. Geological Survey, scale 1:500,000.

Swart, W. G., no date, Swart file - a collection of W. G. Swart's reports on mining properties: Western Historical Manuscript Collection, State Historical Society of Missouri Manuscripts, University of Missouri, Rolla, Missouri, folders no. 182, 366, 463, 503.

The Mining World, 1908a, Nevada: v. XXIX, no. 2, p. 72.

_____, 1908b, Nelson: v. XXIX, no. 12, p. 460.

_____, 1910, Eldorado: v. XXXII, no. 14, p. 724.

U.S. Bureau of Land Management, 1983, Eldorado Mountains G - E - M resources area (GRA no. NV-37) technical report (WSA's NV 050-0423 and 050-0438): Great Basin GEM Joint Venture, contract YA-554-RFP2-1054, available from BLM, Denver, CO, 33 p.

Vanderburg, W. O., 1937, Reconnaissance of mining districts in Clark County, Nevada: U.S. Bureau of Mines Information Circular 6964, 81 p.

Volborth, A., 1963, Rapakivi texture in roof portion and included dikes, and breccias of a granitic batholith in the Newberry and Eldorado Mountains, Clark County, Nevada (abs.): Geological Society of America Special Paper 76, p. 173A.

_____, 1969, Geology of the Eldorado and Newberry Ranges, in Basin and Range Geology Field Conference Guidebook, 2nd, Reno, NV, Mackay School of Mines, p. 2/1-2/9.

_____, 1973, Geology of the granite complex of the Eldorado, Newberry, and northern Dead Mountains, Clark County, Nevada: Nevada Bureau of Mines and Geology Bulletin 80, 40 p.

Wheeler, G. M., 1876, Geographical surveys west of the one hundredth meridian, in California, Nevada, Utah, Colorado, Wyoming, New Mexico, Arizona, and Montana: U. S. War Department, Chief Engineer Annual Report 1876, U. S. 44th Congress, 2nd Session, House Executive Document 1, pt. 2, v. 2, pt. 3, Appendix JJ, 355 p.

Yale, C. G., 1908, Nevada, in Mineral resources of the United States, calender year 1907, part I-metallic products: U.S. Geological Survey, p. 337-398.

APPENDIX

Page

ILLUSTRATIONS

TABLES

TABLE A-1.--Description of samples from the H & E claims, Ireteba Peaks study area, Clark County, NV

(NA, not applicable)

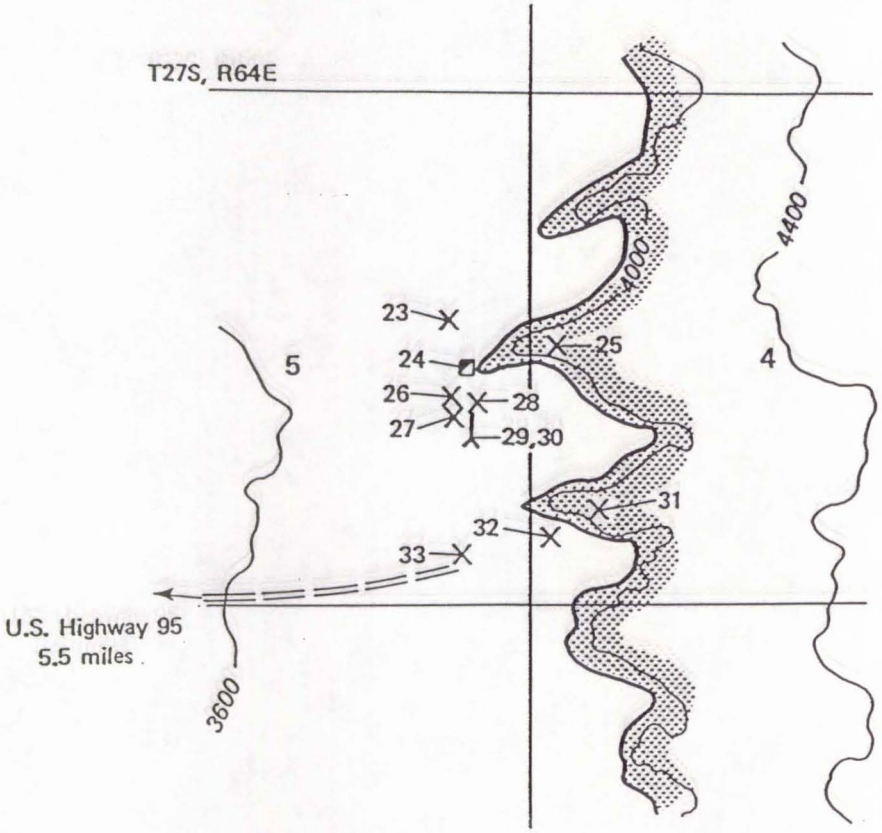
Sample			
No.	Type	Length (ft)	Description
23	Select	NA	Malachite-rich quartz vein from stockpile adjoining 10-ft diameter by 8-ft deep prospect pit in gneiss.
24	do--	NA	Chrysocolla- and malachite-coated gneiss from stockpile adjoining 31-ft deep shaft in gneiss. Copper-rich zone is 5 ft thick at shaft, striking N. 20° E. and dipping 65° SE. Vein is not traceable beyond the shaft.
25	Chip	4.5	Pegmatite lens in gray biotite gneiss-schist. Lens about 6 ft wide by 100 ft long strikes N. 65° W. and dips 80° SW.
26	do--	3.0	Small outcrop of malachite-chrysocolla rich gneiss in 6 ft diameter prospect pit. Mineralized rock does not continue through pit.
27	Select	NA	Malachite and chrysocolla coated pockets in gneiss which are one to three ft in diameter, discontinuous, and generally follow a northerly trend. Prospect pit is 6 ft by 10 ft.
28	Chip	4.0	Fault gouge (1 ft thick) and green mafic dike in gneissic country rock which strikes N. 5° E., and dips 83° SE. Sample at portal of 20 ft long adit which follows fault. Minor malachite on fracture surfaces and some specular hematite.
29	do--	1.0	Sample at face of adit across fault zone. No mineralized rock seen.
30	Select	NA	Malachite-chrysocolla coating fractures in zones up to 6 in. thick in gneiss. Prospect pit is 6 ft diameter.
31	Chip	3.0	Pegmatitic zone in gneiss is 4 ft by 5 ft.
32	Select	NA	Quartz containing hematite and goethite from dump of 9-ft diameter prospect pit. Country rock is gneiss with foliation striking N. 7° E.
33	do--	NA	Hematite stained quartz from dump of 6 ft by 12 ft prospect pit. Host rock is gneiss.

TABLE A-2. Analyses of samples from the H & E claims, Ireteba Peaks study area, Clark County, NV

(N, none detected; -- , not analyzed)

Sample Number	Au ppm	Ag ppm	As ppm	Ba ppm	Bi ppm	Cd ppm	Co ppm	Cr ppm	Cu ppm	Ga ppm	Hg ppm	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Sb ppm	Se ppm	Sn ppm	Te ppm	Tl ppm	W ppm	Zn ppm
23	1.400	0.518	4.93	--	N	N	--	--	18000.	4.480	N	--	36.70	--	2.81	2.880	N	3.020	N	N	--	106.
24	0.285	3.830	7.62	--	N	1.77	--	--	90000.	9.940	N	--	67.90	--	10.90	N	N	N	N	N	--	188.
25	0.060	N	N	1200	N	--	8.	113.	113.	--	N	84.	62.	14.	9.	5.	8.	--	--	--	N	30.
26	0.784	0.605	14.20	--	N	N	--	--	21000.	13.500	N	--	2.69	--	4.08	3.200	N	N	N	N	--	240.
27	N	0.632	9.44	--	19.8	N	--	--	19000.	5.100	N	--	6.86	--	4.73	3.400	N	5.710	N	N	--	50.1
28	N	0.089	7.29	--	N	N	--	--	778.	17.500	N	--	3.25	--	4.43	0.506	1.20	1.080	N	1.140	--	80.2
29	N	0.021	3.62	--	N	N	--	--	92.3	16.000	N	--	1.79	--	3.28	0.437	N	0.929	N	1.150	--	113.
30	N	0.253	N	--	N	N	--	--	6210.	9.620	N	--	7.07	--	3.59	N	N	0.625	N	N	--	66.1
31	0.045	N	N	1100	N	--	1.	111.	13.	--	N	60.	10.	5.	N.	N	N	--	--	--	N	14.
32	0.108	0.069	16.80	--	1.210	N	--	--	50.1	N	N	--	19.40	--	4.36	0.697	N	N	1.560	N	--	4.56
33	N	0.018	1.56	--	0.272	N	--	--	23.7	N	N	--	17.50	--	7.13	0.411	N	N	N	N	--	3.58

No platinium or palladium was detected in sample nos. 23,24,26-30,32,33. Samples 25 and 31 were not analyzed for these elements.



EXPLANATION

Study area boundary

Shaft

Adit

Prospect pit

23
Sample locality

N

0 1000 2000 FEET

Contour interval 400 feet

FIGURE A-1.—Workings and sample localities on the H & E claims

TABLE A-3.--Description of samples from the Cobalt claims, Ireteba Peaks study area, Clark County, NV

(NA, not applicable)

Sample			
No.	Type	Length (ft)	Description
55	Chip--	3.0	Schist-gneiss with veinlets up to 1 in. wide containing quartz and calcite is exposed in prospect pit. Red-brown iron-oxide staining throughout rock.
56	Select	NA	Quartz and calcite from dump at sample site 55.
57	Chip--	2.3	Same as 55. Fault strikes N. 70° E. and dips 70° NW.
58	Select	NA	Red iron-oxide stained granite with minor quartz and calcite veinlets from dumps of two adjoining small prospect pits.
59	Chip--	0.75	Sheared granite. Shear zone strikes N. 40° E. and dips 51° SW.
60	do----	1.2	Quartz-calcite vein between granite on east and gneiss on west strikes N. 50° W. and dips 85° SW.
61	do----	2.5	Red and yellow iron-oxide stained calcite and fine-grained quartz vein in granite exposed in 9 ft deep shaft. Vein on trend from sample site 60 and continues to southeast through samples 62 to 66.
62	do----	1.5	do. Also contains barite. Shaft is 31 ft deep.
63	do----	1.0	do. No working.
64	Select	NA	Quartz, calcite, and red iron-oxide coatings on granite from dump.
65	Chip--	0.5	Quartz and calcite veinlets with red iron-oxide coatings in granite at portal to adit.
66	do----	4.0	Quartz, red iron-oxide, and calcite filled fault in granite strikes N. 70° W., and dips 85° SW.

TABLE A-3.--Description of samples from the Cobalt claims, Ireteba Peaks study area, Clark County, NV--Continued

(NA, not applicable)

Sample			
No.	Type	Length (ft)	Description
67	Select	NA	Silicified, red iron-oxide stained diorite with minor barite from dump. Six-ft-wide fault zone exposed in 41-ft shaft.
68	Chip	1.0	Fault containing red iron-oxide stained diorite striking N. 45° W.
69	do----	0.5	Silicified, red iron-oxide stained diorite in N. 51° W. striking fault that is 3 to 8 in. thick in adit. Fault is on trend of fault zone at sample 63 and 95 ft to the northwest.
70	do----	1.4	Vein in granitic rock containing quartz, barite, red iron-oxides, and fragments of gneiss; strikes N. 55° E. with near vertical dip. Samples 70 to 72 are underground along vein in a 150-ft-long adit.
71	do----	3.5	do.
72	do----	7.0	do.
73	Select	NA	Massive barite and quartz plus minor copper oxide and red iron-oxide stained gneiss from dump of 89 ft deep shaft.
74	do----	NA	do. Thirty-ft-deep shaft.
75	do----	NA	Red iron-oxide stained gneiss from dump of 35 ft deep shaft.

TABLE A-4. Analyses of samples from the Cobalt claims, Ireteba Peaks study area, Clark County, NV

[N, none detected; -- , not analyzed; all values in ppm unless otherwise noted]

Sample Number	Au ppm	Ag ppm	As ppm	Ba ppm	Bi ppm	Cd ppm	Co ppm	Cr ppm	Cu ppm	Ga ppm	Hg ppm	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Sb ppm	Se ppm	Sn ppm	Te ppm	Tl ppm	W ppm	Zn ppm
55	0.251	1.240	5.49	--	N	0.450	11.	--	11.0	5.130	N	--	7.41	--	13.0	N	N	N	N	N	--	192.
56	6.570	5.560	9.99	--	N	0.834	1.	--	27.0	0.991	N	--	10.80	--	111.	0.449	N	N	N	N	--	176.
57	0.213	0.861	12.30	--	N	0.255	11.	--	24.6	7.250	N	--	4.91	--	77.7	N	N	N	N	0.584	--	119.
58	0.184	1.970	20.30	--	N	N	4.	--	117.	4.260	N	--	6.86	--	149.	0.742	N	N	N	N	--	164.
59	0.105	N	33.	600	2.	--	3.	90.	37.	--	0.05	827.	9.	9.	76.	10.	N	--	--	--	N	335.
60	N	4.110	12.40	--	N	N	4.	--	8.03	3.290	N	--	9.29	--	19.0	0.448	N	N	N	N	--	65.7
61	4.150	4.370	75.80	--	N	3.79	7.	--	155.	3.390	0.630	--	22.30	--	595.	4.870	N	N	1.320	N	--	2251.
62	0.063	6.960	45.60	--	N	6.01	4.	--	79.1	2.080	1.340	--	20.00	--	9634.	0.335	N	N	1.510	N	--	4336.
63	1.860	1.990	266.00	--	N	2.22	3.	--	83.5	5.460	0.196	--	31.30	--	584.	5.930	1.64	N	1.510	N	--	3100.
64	0.100	0.6	34.	2300	4.	--	9.	63.	25.	--	0.10	6562.	9.	23.	88.	N	N	--	--	--	N	319.
65	0.100	0.6	52.	1100	N	--	7.	83.	50.	--	0.15	5583.	8.	18.	310.	13.	N	--	--	--	N	980.
66	0.220	6.1	821.	19000	6.	--	20.	71.	482.	--	0.30	>20000.	69.	23.	0.93%	51.	17.	--	--	--	830	2742.
67	N	0.308	23.00	--	2.430	3.22	11.	--	126.	7.860	N	--	11.60	--	1475.	1.960	N	N	1.650	N	--	1886.
68	N	0.077	31.70	--	0.572	1.09	8.	--	94.2	6.340	N	--	13.80	--	263.	3.320	N	N	0.728	N	--	665.
69	N	0.357	18.70	--	3.430	1.02	19.	--	11.5	8.630	N	--	14.30	--	1285.	1.000	N	N	1.650	N	--	2017.
70	0.099	0.922	70.30	--	N	1.93	3.	--	81.0	3.920	N	--	15.00	--	987.	1.840	N	N	2.600	N	--	3741.
71	N	0.245	36.30	--	N	1.21	6.	--	80.9	4.300	N	--	5.98	--	755.	1.170	N	N	1.880	N	--	2050.
72	0.143	2.070	174.00	--	0.548	0.694	1.	--	144.	0.938	N	--	39.70	--	1451.	3.000	N	N	0.485	N	--	452.
73	0.566	1.860	54.40	--	10.4	0.678	1.	--	503.	3.410	N	--	287.00	--	4294.	6.450	N	N	N	N	--	187.
74	N	0.675	39.90	--	0.267	5.34	2.	--	45.7	2.340	N	--	16.20	--	216.	1.780	N	N	1.050	0.591	--	1105.
75	0.143	0.488	14.70	--	N	2.23	6.	--	14.5	3.130	N	--	8.56	--	79.5	0.559	N	N	0.505	N	--	543.

No platinium or palladium was detected in sample nos.55-58,60,63,and 67-75. Other samples were not analyzed for these elements.

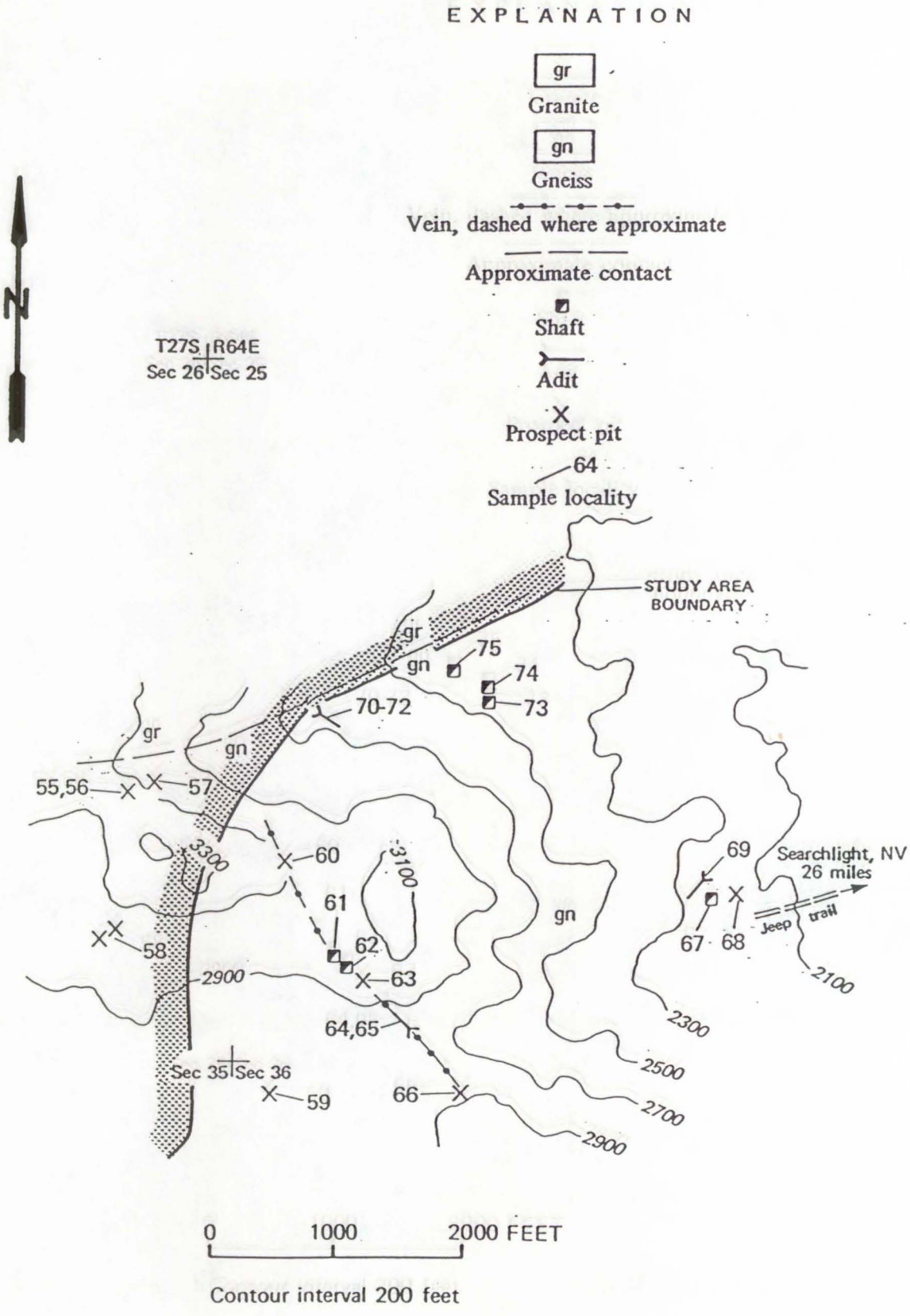


FIGURE A-2.— Workings and sample localities on Cobalt claims

TABLE A-5.--Description of samples from the BMB No. 1 claim, Ireteba Peaks study area, Clark County, NV

(NA, not applicable)

Sample			
No.	Type	Length (ft)	Description
1	Chip--	1.5	Dark-brown calcite and quartz vein with fine grained gray coatings.
2	Select	NA	Quartz and calcite in 6 to 10 in. thick vein striking N. 20° W. and dipping 80° NE.
3	do----	NA	do. Vein, 6 to 12 in thick, strikes N. 20-30° W., and dips 80° NE.
4	Chip-	8.0	Breccia zone, 18 ft wide, with granite fragments cemented by calcite and silica. Granite on both sides of breccia.
5	Select	NA	Quartz and calcite from dump. Quartz is finely crystalline.
6	Chip--	3.0	Intensely weathered granite.
7	do----	2.0	Brown, coarse-grained calcite, 1 ft thick, and brecciated calcite with sugary white calcite matrix, 1 ft thick.
8	do----	1.0	do.
9	Random	NA	Coarse-grained brown calcite, 7 ft wide, and a quartz vein that is up to 12 ft wide. Brecciated calcite and quartz are on east side of vein, which trends north, and granite is on west side of vein.
10	Chip--	4.0	Fine-grained calcite within rhyolite(?) host rock.
11	do----	1.3	Breccia zone with granite fragments in calcite matrix.
12	do----	3.0	do.
13	do----	0.4	Calcite vein strikes N.12° W., dips 88° W. Rhyolite(?) on west side of vein and granite on east.
14	do----	8.0	Banded dark red-brown calcite with granite fragments.

TABLE A-5.--Description of samples from the BMB No. 1 claim, Ireteba Peaks study area, Clark County, NV-Continued

(NA, not applicable)

Sample			
No.	Type	Length (ft)	Description
15	chip--	56.0	Mixed calcite and granite in slope partly covered with talus.
16	do----	4.0	Same as sample 14.
17	do----	3.0	Brecciated granite with calcite veinlets throughout. Calcite is less than 10% of rock.
18	do----	1.3	Intensely weathered dark green dike strikes N. 5° W., dips 65° E.
19	do----	35.0	Brecciated granite with dark red-brown calcite matrix. Calcite is estimated to constitute 10-20 % of the rock.
20	do----	20.0	do.
21	do----	39.0	do.

TABLE A-6. Analyses of samples from the BMB No. 1 claim, Ireteba Peaks study area, Clark County, NV

(N, none detected; --, not analyzed)

Sample Number	Au ppm	Ag ppm	As ppm	Ba ppm	Bi ppm	Cd ppm	Co ppm	Cr ppm	Cu ppm	Ga ppm	Hg ppm	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Sb ppm	Se ppm	Sn ppm	Te ppm	Tl ppm	W ppm	Zn ppm
1	N	298.	1.01	--	N	11.2	--	--	160.	N	N	--	9.07	--	1215.	N	N	N	0.851	N	--	1566.
2	N	136.	N	--	N	7.87	--	--	136.	1.760	N	--	8.90	--	614.	N	N	N	0.627	N	--	1023.
3	0.052	14.0	N	--	N	1.72	--	--	18.1	N	0.094	--	3.78	--	157.	N	N	N	N	N	--	126.
4	0.025	32.8	N	420	5.	--	3.	90.	30.	--	N	6235.	8.	4.	315.	N	5.	--	--	--	N	507.
5	N	27.3	N	--	N	2.48	--	--	20.2	0.677	N	--	6.58	--	219.	N	N	N	N	N	--	234.
6	N	0.851	2.11	--	N	0.646	--	--	20.1	7.750	N	--	3.67	--	56.3	0.269	N	0.553	N	N	--	237.
7	N	0.840	5.85	--	0.326	0.582	--	--	34.3	7.590	1.010	--	4.61	--	27.2	N	N	N	N	N	--	160.
8	0.143	58.6	N	--	N	13.2	--	--	19.2	1.510	N	--	5.88	--	534.	N	N	N	0.689	N	--	1288.
9	N	4.87	2.74	--	N	1.56	--	--	7.09	N	N	--	11.40	--	40.6	N	N	N	N	0.509	--	118.
10	0.123	12.7	1.48	--	N	17.1	--	--	41.6	1.700	1.770	--	43.50	--	879.	N	N	N	0.536	N	--	985.
11	N	665.	7.33	--	0.821	5.09	--	--	405.	9.900	N	--	342.00	--	4522.	N	N	N	0.817	N	--	4478.
12	N	33.7	1.21	--	N	6.96	--	--	45.0	3.660	0.588	--	8.52	--	424.	N	1.15	N	0.725	N	--	1247.
13	N	122.	2.88	--	0.407	16.7	--	--	47.0	3.700	N	--	110.00	--	846.	N	1.11	N	N	N	--	496.
14	0.015	2.4	N	510	7.	--	5.	51.	14.	--	N	12154.	8.	3.	236.	8.	N	--	--	--	N	357.
15	0.010	N	6.	910	7.	--	3.	100.	13.	--	N	2605.	6.	2.	105.	5.	N	--	N	--	N	226.
16	0.010	1.0	N	500	N	--	N	45.	6.	--	N	12131.	9.	N	72.	7.	12.	--	N	--	N	159.
17	N	0.803	1.12	--	N	1.33	--	--	7.13	2.690	1.320	--	5.30	--	77.5	N	N	0.427	N	0.448	--	136.
18	N	0.301	2.78	--	N	N	--	--	77.4	10.000	N	--	2.39	--	51.2	N	N	0.639	N	N	--	216.
19	0.01	N	N	1200	12.	--	3.	101.	10.	--	N	1462.	10.	2.	50.	N	6.	--	--	--	N	157.
20	0.025	N	N	1100	6.	--	2.	101.	12.	--	N	2169.	9.	3.	24.	N	N	--	--	--	N	59.
21	0.005	0.9	9.	1100	6.	--	2.	120.	12.	--	N	2258.	10.	2.	34.	N	13.	--	--	--	N	76.

No platinium or palladium was detected in sample nos.1-3, 5-13, or 17,18. Other samples were not analyzed for these elements.

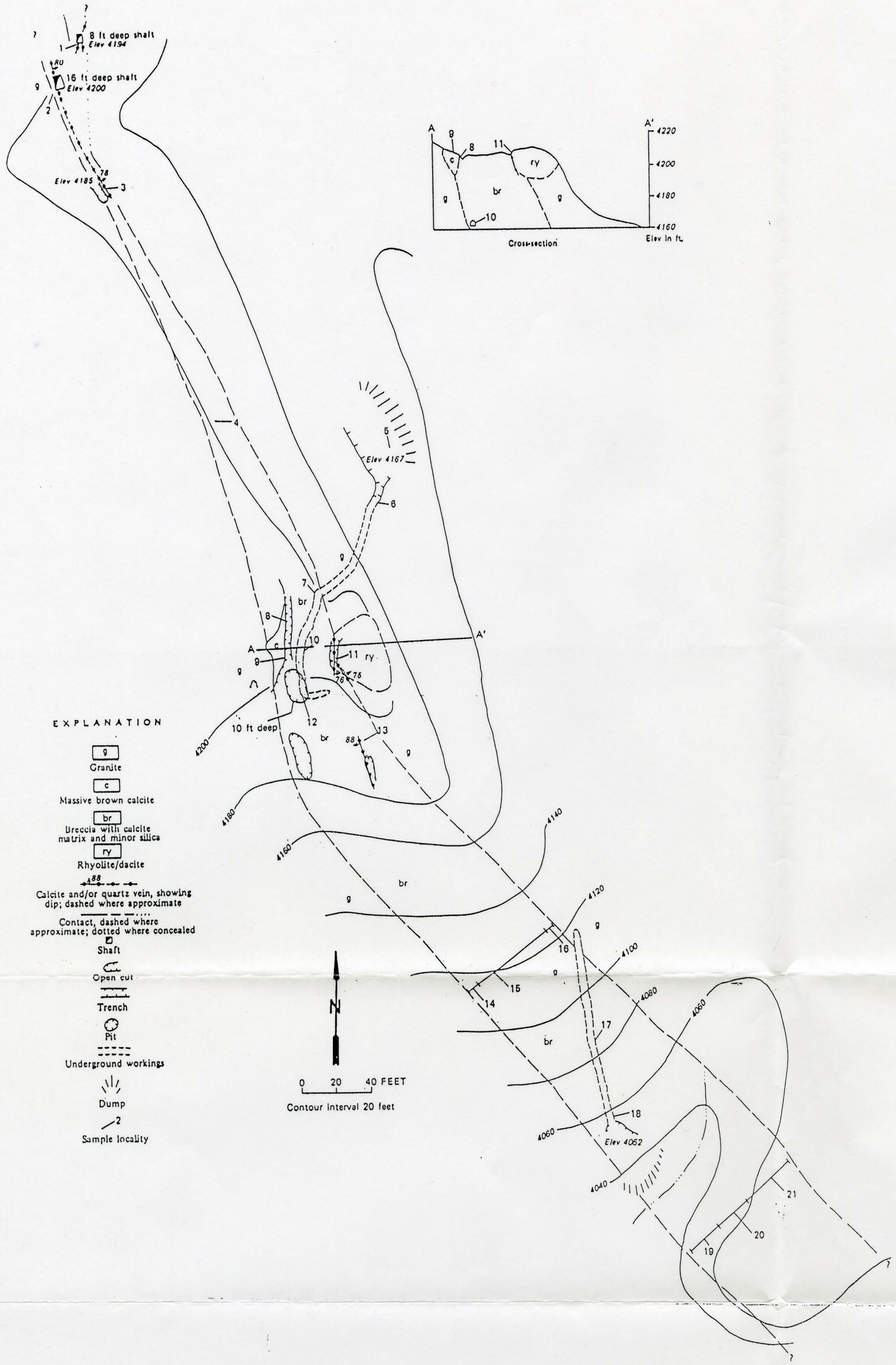


FIGURE A-3.– Workings and sample localities on the BMB No. 1 claim

TABLE A-7.--Description of samples from the Sazarac patented claim group, Ireteba Peak study area, Clark County, NV

(NA, not applicable)

Sample			
No.	Type	Length (ft)	Description
76	Chip--	6.0	East trending fault zone with silicified, bleached red iron-oxide coated, kaolinized granite (?).
77	do----	9.0	do. Vuggy with quartz crystals and minor chrysocolla.
78	Select	NA	Chrysocolla and quartz from dump.
79	Chip--	7.0	Quartz and chrysocolla in red iron-oxide stained and bleached granite.
80	Select	NA	Chrysocolla, quartz, and bleached granite from dump.
81	Chip--	2.0	Sheared, argillized, silicified, and bleached quartz monzonite-granite containing red iron-oxide veinlets.
82	do----	3.0	Sheared, red iron-oxide stained gneiss from inside adit.
83	do----	2.0	Silicified, red iron-oxide stained quartz monzonite-granite.
84	Select	NA	Copper oxide stained quartz monzonite-granite with red iron-oxide and specular hematite veinlets in bulldozed area 115 ft long by 30 ft wide.
85	do----	NA	Malachite-azurite-chrysocolla and red-orange to deep red iron-oxide boxwork with quartz crystals in shear zone in gneiss. Shear zone strikes N. 45° and dips 80° NE.
86	Random	NA	Argillized quartz monzonite-granite with disseminated copper oxides throughout.
87	Chip--	1.3	Massive red and black hematite in highly fractured quartz monzonite-granite.

TABLE A-7.--Description of samples from the Sazarac patented claim group, Ireteba Peaks study area, Clark County, NV-Continued

(NA, not applicable)

Sample			
No.	Type	Length (ft)	Description
88	Chip--	1.0	Bleached and red iron-oxide stained quartz monzonite-granite containing veinlets (as much as 1 in. thick) of calcite.
89	do----	5.0	Thin seams of massive black hematite scattered throughout diabase dike.
90	do----	4.0	Sheared diabase dike and chloritized granite.
91	Select	NA	Massive red to black hematite and quartz from dump.
92	Chip--	4.0	Massive red to black hematite vein strikes N. 30^{o} W. and dips 70^{o} NE.
93	Select	NA	Red iron-oxide and specular hematite from dump.

TABLE A-8. Analyses of samples from the Sazarac patented claim group, Ireteba Peaks study area, Clark County, NV

(N, none detected; -- , not analyzed; all values in ppm unless otherwise noted)

Sample Number	Au ppm	Ag ppm	As ppm	Ba ppm	Bi ppm	Cd ppm	Co ppm	Cr ppm	Cu ppm	Ga ppm	Hg ppm	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Sb ppm	Se ppm	Sn ppm	Te ppm	Tl ppm	W ppm	Zn ppm
76	0.335	N	21.	3200	8.	--	4.	73.	89.	--	N	699.	6.	19.	18.	N	N	--	--	--	N	254.
77	7.577 oz/t	6.0	59.	5300	154.	--	4.	77.	1795.	--	0.15	486.	34.	11.	298.	13.	8.	--	--	--	19	989.
78	0.761 oz/t	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
79	0.335	N	9.	1900	9.	--	11.	67.	1797.	--	N	1091.	13.	18.	35.	N	N	--	--	--	N	372.
80	0.725 oz/t	1.6	N	1400	1810.	--	8.	74.	3.06%	--	0.10	1002.	71.	13.	540.	N	N	--	--	--	N	358.
81	N	0.166	10.80	--	1.540	0.288	--	--	155.	3.420	N	--	29.70	--	12.10	0.660	N	N	N	N	--	55.2
82	N	0.050	4.53	--	0.902	0.579	--	--	1141.	19.200	N	--	15.40	--	10.80	0.659	N	N	N	N	--	171.
83	0.065	0.200	16.60	--	7.710	0.938	--	--	95.3	3.710	0.315	--	62.30	--	30.80	0.855	3.17	N	0.590	N	--	36.0
84	N	0.181	2.65	--	0.622	N	--	--	298.	N	N	--	16.10	--	6.52	0.511	N	1.010	N	N	--	12.3
85	N	0.061	N	--	N	0.418	--	--	1524.	N	N	--	8.74	--	6.46	0.350	N	N	N	N	--	344.
86	0.429	1.640	6.10	--	114.	1.91	--	--	1850.	1.530	N	--	109.00	--	138.	0.663	0.965	N	0.692	N	--	681.
87	N	0.056	4.90	--	0.659	N	--	--	17.2	N	N	--	13.70	--	16.8	1.080	N	N	N	N	--	12.8
88	0.080	0.421	3.61	--	5.070	N	--	--	65.3	N	N	--	67.50	--	18.0	0.687	N	N	N	N	--	14.8
89	N	0.154	3.72	--	1.170	2.08	--	--	25.2	19.700	N	--	6.27	--	64.8	0.291	N	0.645	1.170	N	--	1038.
90	N	0.029	4.46	--	N	1.77	--	--	13.4	9.610	N	--	3.97	--	249.	0.496	N	N	N	N	--	368.
91	N	0.891	3.95	--	1.430	2.62	--	--	147.	1.180	N	--	19.90	--	37.9	0.484	0.900	1.170	0.610	0.748	--	68.3
92	N	0.385	1.96	--	0.958	N	--	--	28.3	3.160	N	--	15.60	--	37.0	0.740	1.66	7.030	0.552	N	--	14.8
93	N	0.127	3.48	--	0.344	1.37	--	--	451.	20.800	0.117	--	3.59	--	85.6	0.764	N	N	N	N	--	280.

No platinum or palladium was detected in sample nos.81-93. Other samples were not analyzed for these elements.

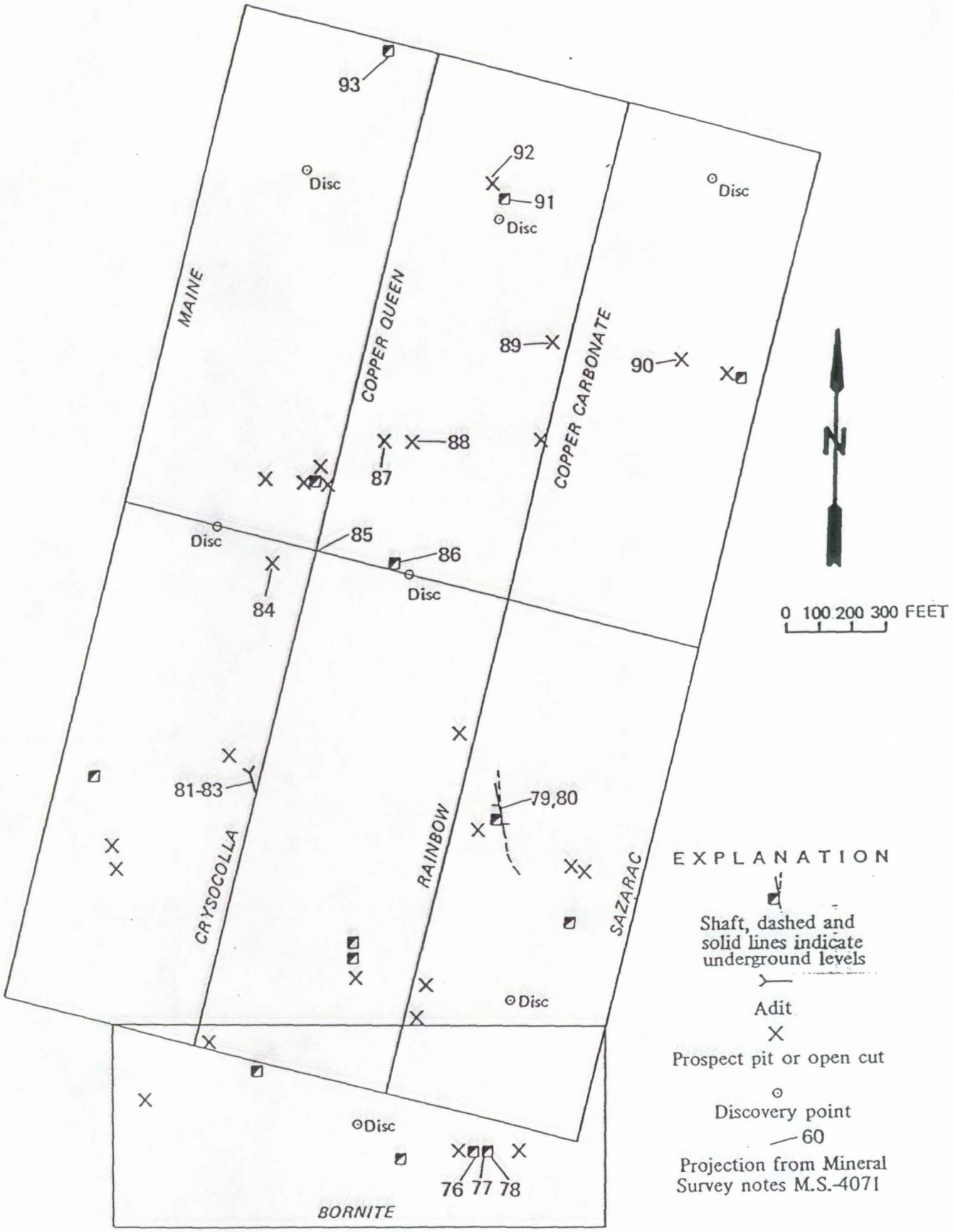


FIGURE A-4.– Sazarac group (Rockefeller mine) patented claims, workings, and sample sites

TABLE A-9. Complete analytical results of samples from other properties in and near the Ireteba Peaks study area, Clark County, NV

[N, none detected; --, not analyzed]

Figure Number	Property Name	Sample number	Au ppm	Ag ppm	As ppm	Be ppm	Bi ppm	Cd ppm	Cu ppm	Ga ppm	Hg ppm	Mo ppm	Pb ppm	Sb ppm	Se ppm	Sn ppm	Te ppm	Tl ppm	Zn ppm
3	Unnamed	34	N	0.130	N	--	2.730	0.254	443.	0.996	0.156	7.25	7.53	N	N	N	1.290	N	12.2
	prospect	35	N	0.052	1.82	--	7.720	0.626	309.	10.900	N	4.86	7.04	N	N	N	1.170	1.030	547.
4	AJ #1	36	0.074	0.055	3.70	--	N	N	21.5	0.616	N	9.14	6.77	N	N	N	N	N	15.3
5	RJS claims	37	N	0.071	N	--	0.651	N	30.5	6.830	N	3.05	3.16	N	N	N	N	0.669	51.3
6	Holsak	38	N	0.071	N	7.9	0.292	N	10.	0.662	0.135	5.81	7.65	N	N	N	N	N	9.56
	claims	39	N	0.029	N	N	0.450	N	8.34	N	N	13.80	1.31	N	N	N	N	0.453	1.97
		40	N	0.036	N	4.2	0.263	N	23.9	N	0.094	4.18	8.09	N	N	N	N	N	3.35
		41	0.097	1.780	N	1.6	5.740	N	1244.	5.570	N	8.94	2.91	N	N	0.797	4.630	0.644	63.9
		42	0.388	5.260	5.85	2.8	1.130	0.425	79.4	5.110	N	8.28	73.1	1.880	N	N	N	0.836	83.1
		43	N	0.025	N	N	N	N	7.64	N	0.166	8.51	1.95	N	1.14	N	N	N	1.29
		44	0.097	0.095	N	4.2	0.397	0.265	47.0	10.200	N	2.60	10.20	N	N	N	N	1.140	76.4
7	Unnamed	45	0.414	0.184	6.07	--	3.230	N	29.2	4.290	N	12.40	6.58	N	N	0.711	1.640	N	25.2
	prospect	46	N	0.038	N	--	N	N	46.5	11.000	N	0.49	3.55	N	N	0.472	N	0.996	89.9
		47	N	0.052	1.92	--	N	N	44.1	9.930	N	N	9.27	N	N	N	N	N	90.2
		48	N	0.027	1.28	--	N	N	26.3	12.200	N	0.66	4.50	N	N	1.030	N	1.300	98.3
8	Unnamed	49	N	0.061	1.68	--	2.170	0.269	14.2	6.470	N	7.77	5.60	N	N	0.458	0.824	0.635	57.2
	prospect	50	0.050	2.570	3.73	--	5.540	N	2902.	5.280	N	26.50	6.47	N	1.34	N	1.690	N	49.2
		51	N	0.045	N	--	N	N	21.9	4.530	0.104	3.44	2.82	N	N	N	N	N	37.9
		52	N	0.104	1.51	--	N	0.256	17.9	1.480	0.198	0.88	6.10	N	N	N	N	0.789	22.4
9	St. Louis	53	0.857	8.600	6.30	--	21.3	2.52	1486.	0.552	0.138	173.00	7611.	1.720	5.65	N	6.380	N	309.
	mine	54	13.000	5.260	6.89	--	2.410	1.48	650.	N	0.128	51.50	2417.	1.150	2.07	N	1.680	N	256.
12	Five Spot	94	N	0.112	11.50	--	0.837	N	56.3	N	N	16.80	361.	1.050	N	N	0.530	N	312.
	claims	95	N	0.190	11.40	--	1.600	0.822	254.	6.560	N	31.90	36.7	0.420	N	N	0.544	N	358.
		96	N	0.074	2.62	--	N	N	66.2	9.100	N	2.50	6.86	0.725	N	N	N	N	137.
13	Crystal Lode	97	N	0.019	N	--	N	N	2.00	0.576	N	9.71	5.16	0.335	N	N	N	N	8.51
		98	N	0.027	N	--	N	N	10.7	8.270	N	1.74	5.87	0.368	N	N	N	N	83.2

No platinum or palladium was detected in any sample.

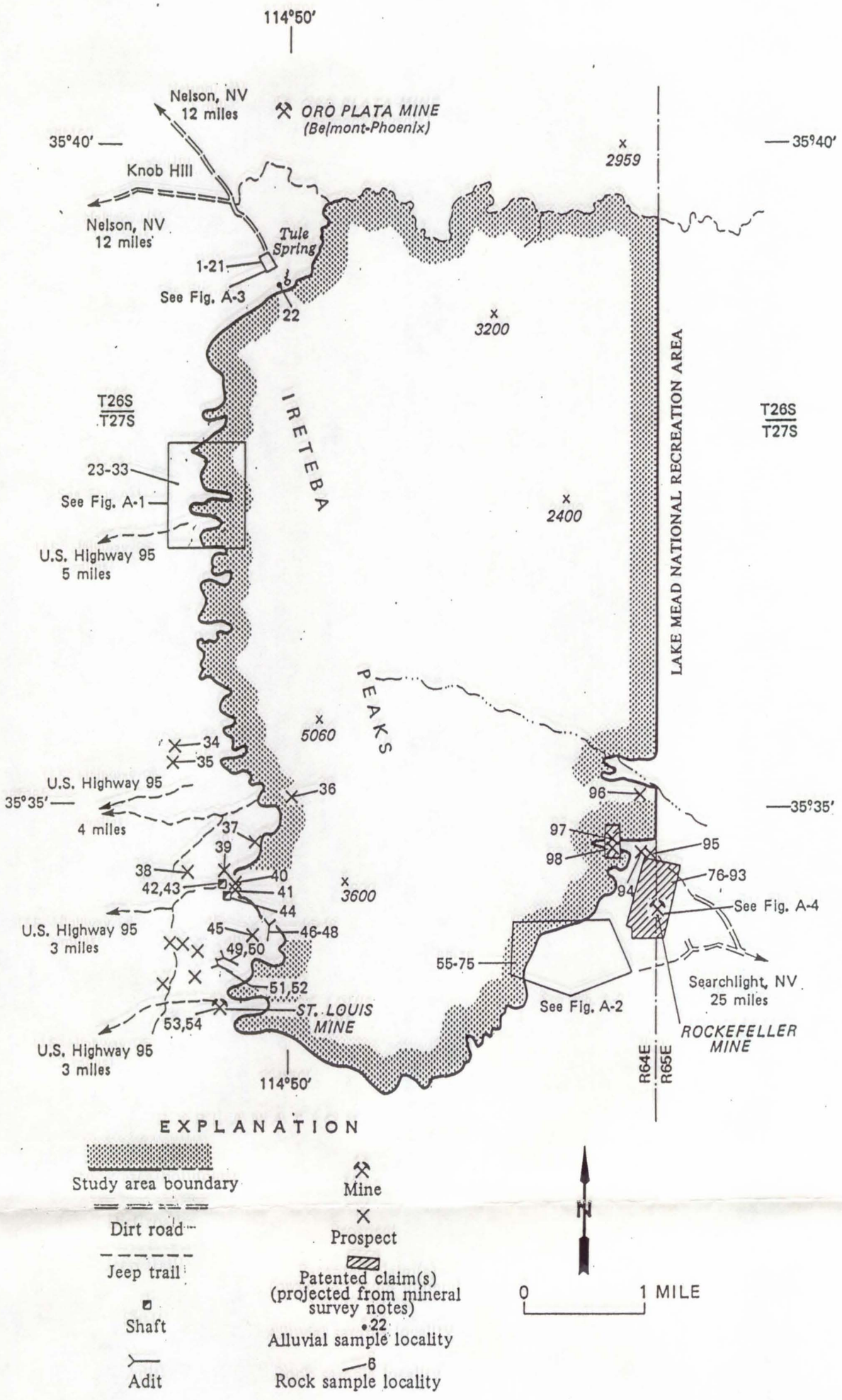


FIGURE A-5.— Location of sample sites in and near the Ireteba Peaks study area, Clark County, NV