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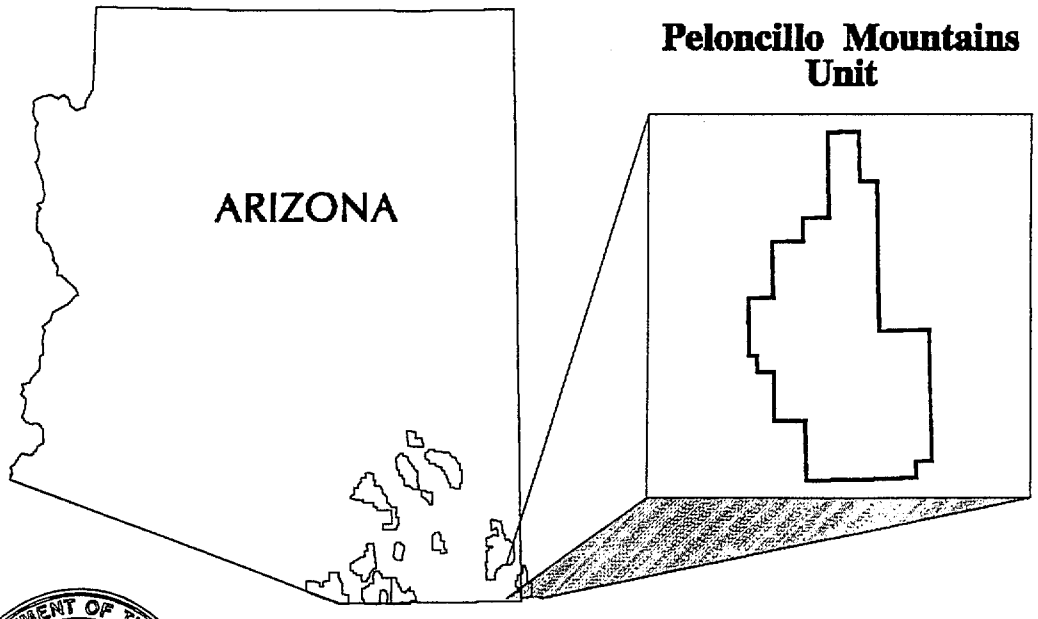
**Mineral Land Assessment**
**Open File Report/1993**

# MINERAL APPRAISAL OF CORONADO NATIONAL FOREST, PART 4

## Peloncillo Mountains Unit
## Cochise County, Arizona
## Hidalgo County, New Mexico

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Between 1988 and 1992, the U.S. Bureau of Mines studied the mineral resources of the Coronado National Forest to appraise and determine the types and locations of deposits that could be mined economically, both under current conditions and for those of the foreseeable future. The study included a literature search and a comprehensive field examination to find, examine, and inventory any mine or prospect sites. This report covers the work done in the Peloncillo Mountains management unit of the Forest. No proven economic mineral resources were determined. A sub-economic resource for gold exists at the Silver Tip Mine. Future activity is possible south of the Silver Tip Mine for additional gold-bearing silicified structures. If promising structures are found, a limited drilling program would be required to determine size and grade.

Two occurrences of epithermal manganese veins crop out near the Jasper Mine. No future activity is foreseen here, because of the small volume (100 st, maximum) of mineralized material.

No exploration activity for base and precious metals is expected under current economic conditions. Any future mining activity would likely be limited to areas outside the Roadless Areas. This restriction further reduces the likelihood of future mining activity.


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# MINERAL APPRAISAL OF CORONADO NATIONAL FOREST

## PART 4 PELONCILLO MOUNTAINS UNIT, COCHISE COUNTY, ARIZONA, AND HIDALGO COUNTY, NEW MEXICO

by

Robert C. Armstrong

MLA 18-93
1993

Intermountain Field Operations Center,
Denver, Colorado

UNITED STATES DEPARTMENT OF THE INTERIOR
Bruce Babbitt, Secretary

BUREAU OF MINES
Hermann Enzer, Acting Director

## PREFACE

A January 1987 Interagency Agreement between the U.S. Bureau of Mines (USBM), U.S. Geological Survey, and U.S. Forest Service describes the purpose, authority, and program operation for the forest-wide studies. The program is intended to assist the Forest Service in incorporating mineral resource data in forest plans as specified by the National Forest Management Act (1976) and Title 36, Chapter 2, Part 219, Code of Federal Regulations, and to augment the USBM mineral resource database so that it can analyze and make available minerals information as required by the National Materials and Minerals Policy, Research and Development Act (1980). This report is based on available data from literature and a field investigation.

This open-file report summarizes the results of part of the USBM forest-wide study of the Coronado National Forest. The report is preliminary and has not been edited or reviewed for conformity with the USBM editorial standards. This study was conducted by personnel from the Resource Evaluation Branch, Intermountain Field Operations Center, Building 20, Denver, Colorado, 80225

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## UNIT OF MEASURE ABBREVIATIONS USED IN THIS REPORT

| | |
|---|---|
| ft | foot |
| in | inch |
| mi | mile |
| $mi^2$ | square mile |
| ppb | parts per billion |
| ppm | parts per million |
| %, pct | percent |
| lb | pound |
| st | short ton, 2000 pounds |
| oz | troy ounce |
| oz/st | troy ounce per short ton |

# MINERAL APPRAISAL OF CORONADO NATIONAL FOREST
# PART 4 PELONCILLO MOUNTAINS UNIT,
# COCHISE COUNTY, ARIZONA, AND HIDALGO COUNTY, NEW MEXICO

by

Robert C. Armstrong, U.S. Bureau of Mines

## SUMMARY

Between 1988 and 1992, the U.S. Bureau of Mines studied the mineral resources of the Coronado National Forest to appraise and determine the types and locations of deposits that could be mined economically, both under current conditions and for those of the foreseeable future. The study included a literature search and a comprehensive field examination to find, examine, and inventory any mine or prospect sites. This report covers the work done in the Peloncillo Mountains management unit of the Forest.

Two types of mineralized structures were sampled: silicified fault and/or fracture zones, and manganese oxide-filled fractures and stringers. Some rock-chip and select samples from these structures showed anomalous or elevated concentrations of one or more of the following: gold, silver, lead, zinc, manganese, molybdenum, tungsten, vanadium, beryllium, mercury, and tellurium. Twenty-one rock-chip or select samples, including 14 from an earlier RARE II study, were analyzed.

No proven economic mineral resources have been determined during this study in the Peloncillo Mountains unit. A sub-economic resource for gold exists at the Silver Tip Mine. A reasonable location for future activity is the area south of the Silver Tip Mine, where there may be additional gold-bearing silicified structures.

If promising structures are found, a limited drilling program would be required to determine size and grade.

Two occurrences of epithermal manganese veins crop out near the Jasper Mine. No future activity is foreseen here, because of the small volume (no more than 100 st) of mineralized material.

The rock unit at the Ligier Tufa Mine is of rather ordinary quality, and is generally unsuited for use as dimension stone. No resource was determined for that commodity, and no future activity is foreseen.

No exploration activity for base and precious metals is expected under current economic conditions. Also, any future mining activity would likely be limited to areas outside the Roadless Areas. This restriction further reduces the likelihood of future mining activity.

## INTRODUCTION

For purposes of the U.S. Bureau of Mines (USBM) field investigations, the Coronado National Forest is divided into 13 study units (fig. 1). The Peloncillo Mountains unit encompasses 85,706 acres, or 4.9 percent of the total acreage in the Coronado National Forest. Of these, 17,090 acres are in Cochise County, Arizona, and 71,541 acres are in Hidalgo County, New Mexico. In New Mexico, 2,925 acres within the Forest are state or privately owned. No state or privately owned land is within the Arizona portion. The Bunk Robinson Peak and the Whitmire Roadless Areas (plate 1) encompass 15,850 and 12,740 acres, respectively. The Roadless Areas comprise about one-third of the Peloncillo Mountains unit.

The term "Peloncillo Mountains unit," as used in this report, refers to the area of the Peloncillo Mountains which lies within the Forest boundary. "Peloncillo Mountains" refers to the entire mountain range. "Roadless Areas" refers to the Bunk Robinson Peak and Whitmire Canyon RARE II study areas.

## Geographic setting

The Peloncillo Mountains unit is located on the Arizona-New Mexico border, southeast of the Chiricahua Mountains. Elevations range from about 4,600 to 6,300 ft, with a terrain of moderate relief. Vegetation consists of light to moderate brush and scrub trees, typical of the lower mountain areas of southern Arizona. The central portion of the Peloncillo Mountains unit is accessible via the Geronimo Trail road from Douglas, Arizona (plate 1). Other areas are accessible by unimproved roads and trails which connect with U.S. or state highways.

## Geologic setting

The geology of the Peloncillo Mountains unit is predominately volcanic in origin. Mid-Tertiary (Oligocene and Miocene) felsic ash-flow tuffs, lavas, and volcaniclastic and epiclastic units comprise the majority of the area (Hayes and others, 1983, p. 4 and map). Quaternary basaltic lavas, fan gravels, and alluvium also occur in the study area.

Poulter (1985, p. 4-5) reports a rhyolitic intrusive unit, intensely silicified fault or fracture zones with disseminated pyrite, and areas of argillic alteration, all along a north-northeasterly belt in the south-central area of the Peloncillo Mountains unit. The silicified structures have been the subject of exploration for gold and silver in the past and in recent years.

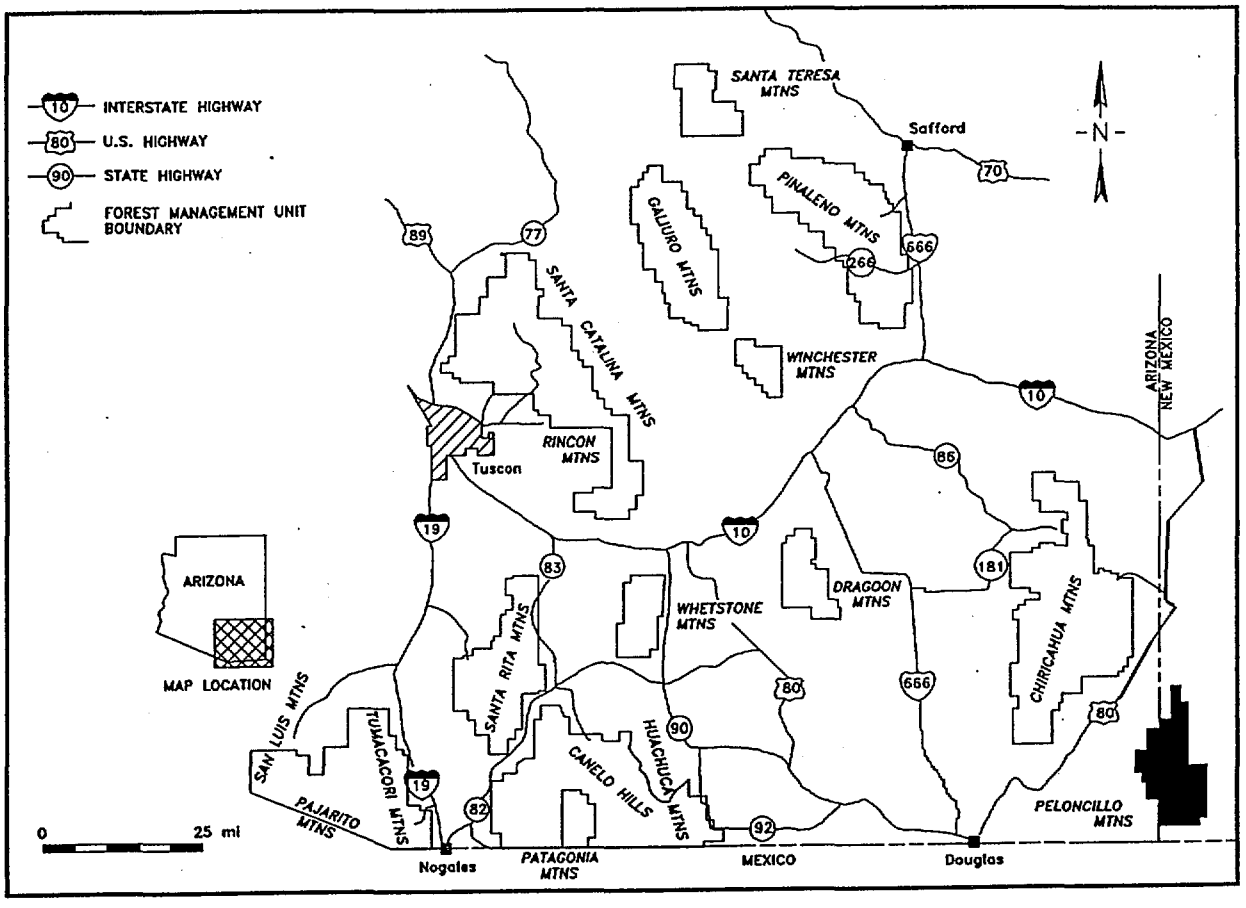


Figure 1.--Location map of the Peloncillo Mountains Unit, Cochise County, Arizona and Hildago County, New Mexico.

The collapsed Geronimo Trail Cauldron covers the central and southern portions of the area. Several north-trending faults may be related to the cauldron collapse, but may also have had continued activity in recent times.

## Mining history and past production

The Peloncillo Mountains unit contains only a few mine workings. Two metallic mines are reported: the Silver Tip Mine and the Jasper (formerly Lucky Strike) Mine. One prospect pit, the "Galena Pit," and a dimension stone prospect, the Ligier Tufa Mine, are also in the area. Mining history and production in the area is discussed in terms of the three commodity types produced or explored for at these workings. Also discussed are past oil and gas exploration.

There is no current exploration or production within the Peloncillo Mountains unit. There are also no currently valid mining claims.

### Manganese

The Jasper Mine is a past producer of manganese. It is located in the NW. 1/4 section 27, T. 22 S., R. 32 E. (Farnham and others, 1961, p. 40; Hammarstrom and others, 1988, p. 54, and appendix B, p. 14). The claim was worked sometime between 1951 and 1957; the principal working is a 15-ft vertical shaft. It is reportedly located in a zone of sporadic epithermal, volcanic-hosted manganese mineralization (pyrolusite and psilomelane). The mineralization occurs as interlacing seams, stringers, and small irregular bunches in generally east-west trending fractures, over an area 250 ft in length and up to 30 ft in width.

Farnham and others (1961, p. 40) report that several tons of sorted ore from the Jasper Mine were estimated to contain 10% to 15% manganese. Keith and others report that this ore was stockpiled and not shipped (1983, p. 25).

A search was made for the shaft in 1992. Neither a shaft nor a stockpile were found, but an area of slumped, altered tuff may have been the location of the shaft (plate 1). Also, two zones of manganese fracture-filling and stringers were found, closely matching the descriptions given by Farnham and others and Hammarstrom and others. Further descriptions are given in the Mineral Assessment section and in appendix C.

Keith and others have described the Cottonwood Basin metallic mineral district (plate 1) as having mid-Tertiary vein manganese, with or without barium, lead, or silver. They report production from the district identical to the production from the Jasper Mine as given above. However, the location of the mine is not within the boundaries of the district as shown on their map. Since no workings are known to be in the district, the establishment of the district was probably based on the possible continuance of manganese veining to the northeast of the Jasper Mine area (see Keith and others, 1983, p. 9, 25, and map).

Precious and base-metals

Silicified structures in the central part of the Peloncillo Mountains unit have been explored for precious and possibly base metals. Two workings, the Silver Tip Mine and the "Galena Pit," are located on two of these structures.

The Silver Tip Mine is located in the SE. 1/4 section 26, T. 22 S., R. 32 E. The workings consist of two adits, 240 ft and 30 ft long, a 75-ft shaft driven to

intersect the face of the larger adit, and some small prospect pits (fig. 2-4). The structure of interest in the main adit (fig. 2) is a 10 ft wide fault zone, striking about N. 8° W. and dipping 70° SW. No production records have been found. However, the excavated volume of fault material indicates that roughly 360 st of ore (gold or gold-silver) were removed.

A prospect or shallow shaft referred to as the "Galena Pit" by Poulter (1985, p. 7) is located in the NE. 1/4 section 26, T. 22 S., R. 23 E. It is on a silicified structure which contains galena. No production records have been found.

In the mid-1980's, interest was renewed in these structures. An exploration project on some of them is discussed in the section below.

Geronimo Project

In 1984 and 1985, a joint venture exploration and drilling program was conducted by Nicor Mineral Ventures, Inc. and Superior Oil Co., Minerals Division. The Geronimo (also called the "GER") property of 104 unpatented mining claims straddles the Arizona-New Mexico state line in the central part of the Peloncillo unit (plate 1).

Reconnaissance exploration consisted of soil and rock chip sampling over a 6,000-ft by 7,000-ft area, centered on the most strongly altered rocks. Soil samples were taken every 100 ft, and rock-chip samples every 200 ft, on sampling lines spaced 600 ft apart.

Four reverse circulation holes were drilled to investigate silicified structures at depth. A total of 3,460 ft was drilled.

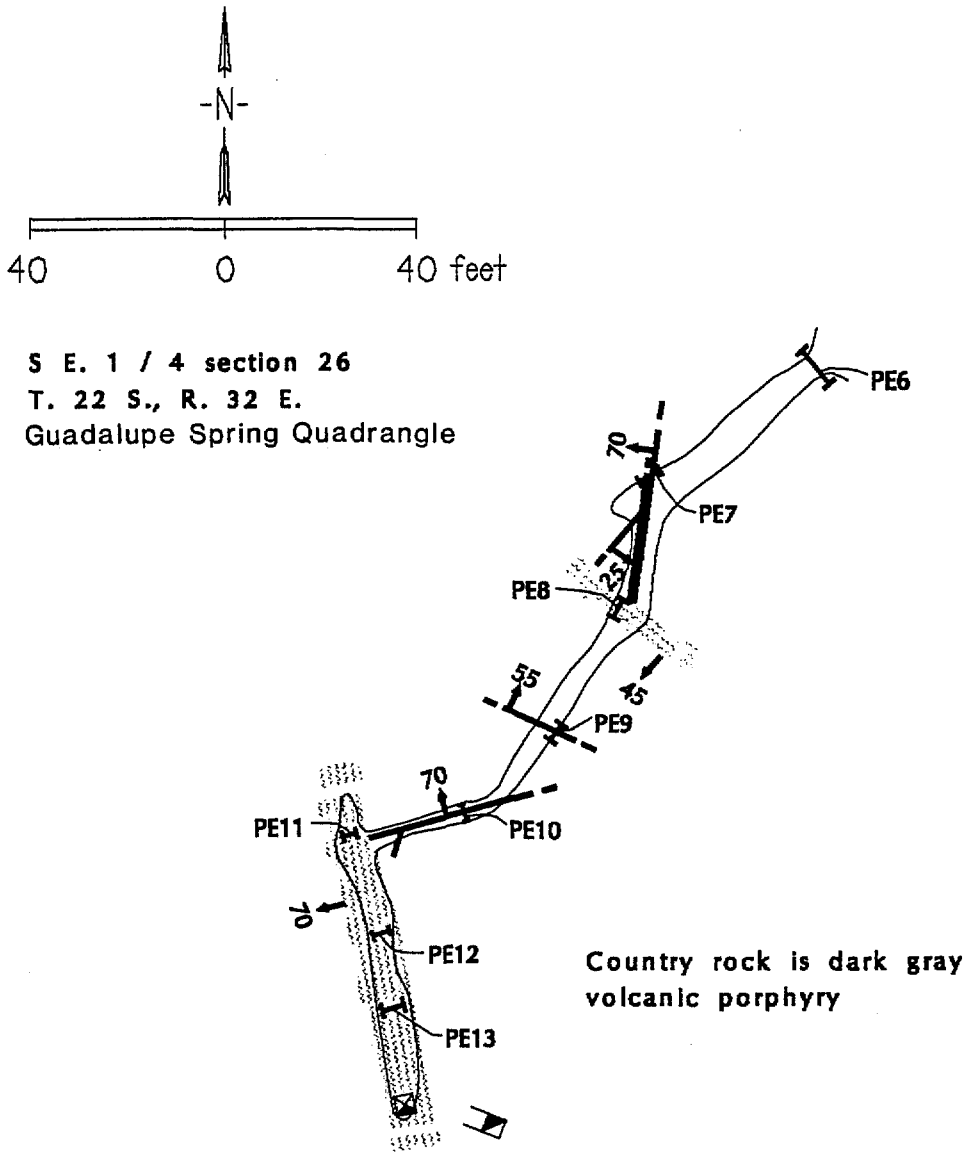


Figure 2.--Silver Tip Mine, main adit, showing sample localities PE 6-13.

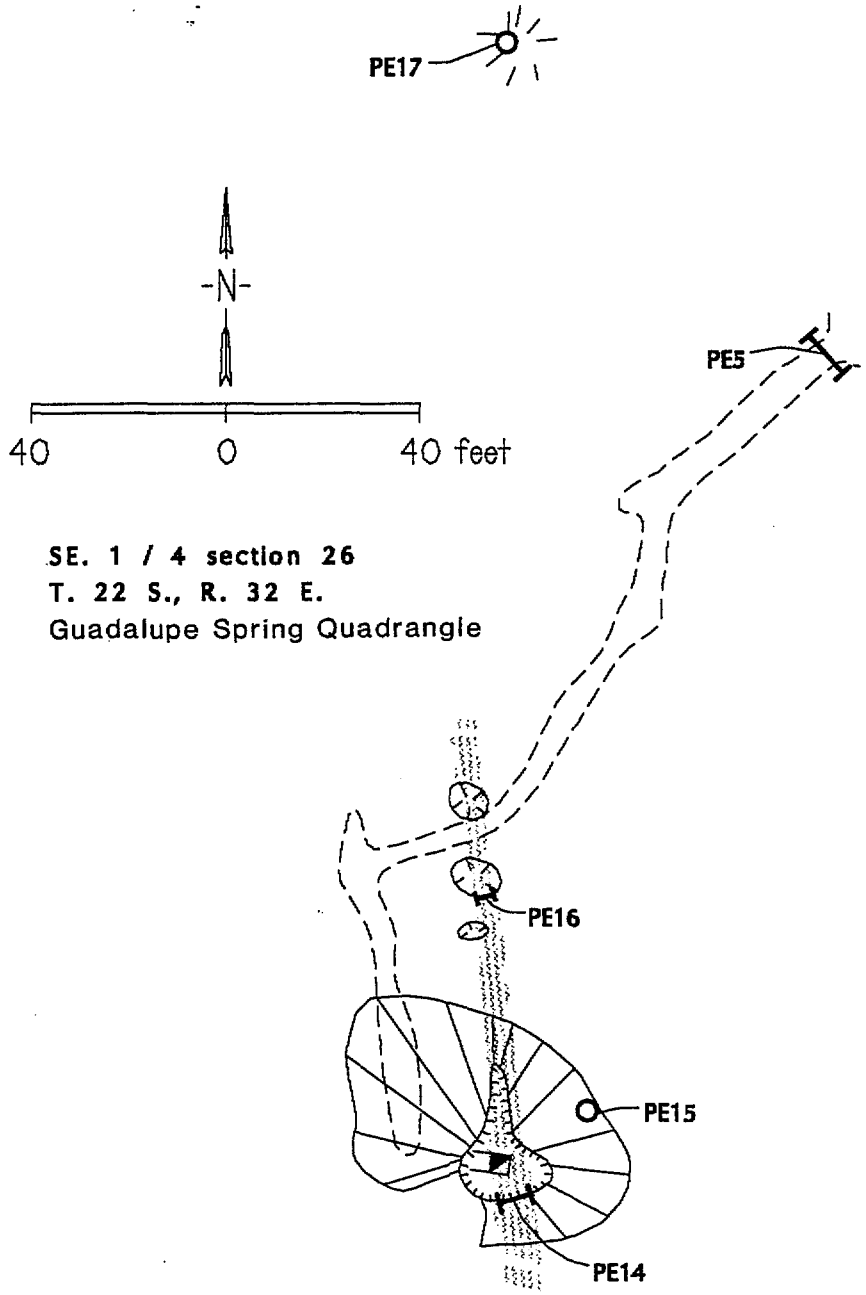


Figure 3.--Silver Tip Mine, main adit surface workings, showing sample localities PE 5 and PE 14-17.

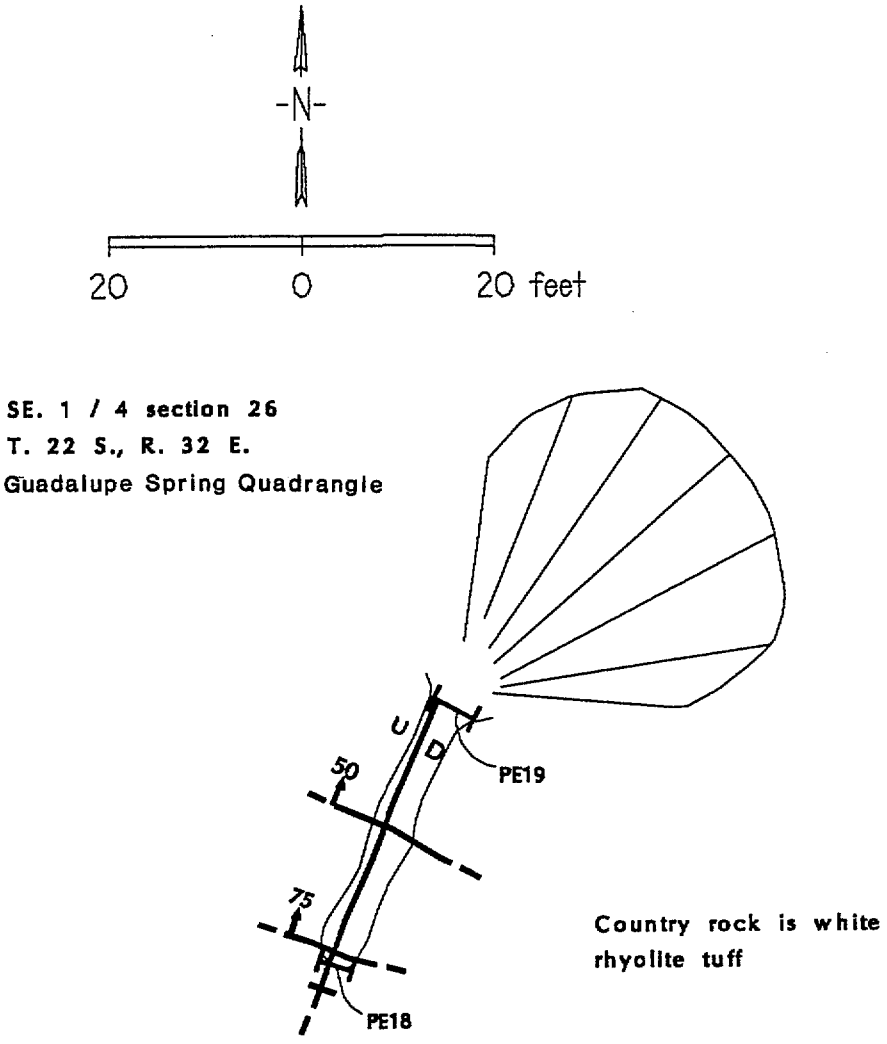


Figure 4.-- Silver Tip Mine, secondary adit, showing sample locations PE 18-19.

A final report by Superior Oil (Poulter, 1985, p. 1) reports weakly anomalous gold, mercury, arsenic and antimony concentrations. An area west and southwest of the Silver Tip Mine was identified as the most consistently anomalous.

A report by Nicor Mineral Ventures, Inc. (Emanuel, 1985, p. 4) reports weak anomalies for lead, zinc, silver, and mercury. In addition, two samples taken from drill hole GER-3 showed anomalous copper (165-190 ppm) and molybdenum (225-235 ppm) concentrations.

Poulter (1985, p. 6) stated that selection of the drill hole sites was done hastily, and based only on preliminary field work results. A recommendation was made to do further drilling based on more complete evaluation of geologic and geochemical data. Additional geologic mapping was also recommended. However, divestiture of its Minerals Division by Superior Oil, and restructuring of Nicor by its parent company, resulted in postponing work on the claims. By 1988, the project was abandoned; the claims are not currently valid.

Dimension stone

A small prospect for decorative or dimension stone, the Ligier Tufa Mine, is in the center W. 1/2 section 26, T. 22 S., R. 32 E. (plate 1). Eight claims were staked, but were declared invalid in 1960 by the U.S. Bureau of Land Management (BLM) because they contained only "common varieties" of stone and were, therefore, not locatable (ADMMR Ligier Tufa Mine file). There is no evidence that the Ligier Tufa Mine ever went into production. Apparently, only a few test blocks were removed.

Oil and gas

Hayes and others (1983, p. 4) reported that at that time, 36 $mi^2$ of the Bunk Robinson Peak and Whitmire Roadless Areas were either leased, or leases were pending, for oil and gas exploration. This was undoubtedly related to extensive but short-lived interest in a postulated overthrust belt trending northwest-southeast through Arizona (Keith, 1979, p. 10-14). There was speculation that such a belt might connect the already established Idaho-Wyoming-Utah and Chihuahua fold-thrust belt regions. However, no major oil or gas fields were ever discovered. No reports of drilling or other exploration in the study area have been found. Hayes and others (1983, p. 5) concluded that any oil or gas that might have existed beneath the Roadless Areas would have been adversely affected by Tertiary volcanic activity.

## Previous investigations

The Bunk Robinson Peak and Whitmire Canyon Roadless Areas (plate 1) were studied in 1980 as part of the Second Roadless Area Review and Evaluation (RARE II) (Hayes and others, 1983, p. 1). The study consisted of a survey of regional reconnaissance, known mines, prospects, and mineralized areas. Sampling included rock-chip, specimen, and panned-concentrate samples. Results of the study are summarized in the Mineral Assessment section.

In 1988, USGS personnel conducted a preliminary mineral resource assessment of the Douglas $1^{\circ} \times 2^{\circ}$ quadrangle (Hammarstrom and others, 1988, p. 1). Some results from this study are included in the Mineral Assessment section.

## Methods of investigation

The present investigation included research of geologic and mining literature, including Arizona Department of Mines and Mineral Resources (ADMMR) files. BLM mining claim records were also examined.

U.S. Forest Service 1:24000 scale land-use maps and U.S. Geological Survey (USGS) 7-1/2 minute 1:24,000 scale topographic maps were used to determine Forest and private land boundaries.

Field examination of mines, prospects, and mineralized outcrops was conducted in 1989 and 1992. Seven rock-chip[1] or select samples[2] were collected, from which pulp samples were prepared. Laboratory analyses of the pulp samples were performed. Each pulp sample was analyzed by a) 34 element instrumental neutron activation analysis (INAA) performed by Bondar-Clegg and Co., Ltd., and b) 32 element inductively-coupled plasma spectrometry (ICP) performed by Chemex Labs, Inc.

In addition, 14 sample[3] pulps from the Bunk Robinson Peak and Whitmire Canyon RARE II study were re-analyzed by the same methods for the current study.

## MINERAL ASSESSMENT

Literature research of the Peloncillo Mountains unit indicated the possibility of mineral resources for three groups of commodities: manganese, gold and/or silver, and dimension stone. A sub-economic resource was determined for gold. Undiscovered resources may also exist for gold and/or silver. Occurrences of manganese and dimension stone were found.

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[1] Composed of rock chips taken on a continuous line across a mineralized zone or other exposure.

[2] Composed of rock pieces collected because of a unique or specific property. Often from dumps or stockpiles, and can be used to estimate maximum metal concentrations present at sites where mine workings or mineralized zones are inaccessible.

[3] Rock-chip samples and select samples. See appendix C.

Complete sample assay results are given in appendices A and B. Sample descriptions, and original RARE II sample numbers, are given in appendix C.

## Epithermal manganese occurrences

Two occurrences of epithermal manganese mineralization were investigated in the area of the Jasper Mine (select samples PE020 and PE021). The mineralization occurs as veinlets and stringers following fractures within the rhyolitic tuff country rock. These fractures are near vertical, with strikes varying from about N. 25° W. to about N. 25° E. The most prominent fractures have a strike of N. 20°-25° E. Thicknesses ranged from 0.1 to 2 in. Brecciated xenoliths of country rock were noted in some of the thicker veinlets. Extent of the mineralization was difficult to determine, because in situ mineralized material was exposed for only a few feet. However, manganese vein float was found over a strike distance of about 100 ft at each of the two locations. Much of sample PE020 and most of sample PE021 was composed of float material rather than in situ material. Minor clay alteration and bleaching of the tuff, presumably also of epithermal origin, occurs at both sample sites. Chalcedony also occurs as float in the area; chalcedony often occurs with this deposit type.

The two samples exceeded the upper detection limit of 1.0% for manganese concentration (appendix B). They also contained notable concentrations of beryllium (5.0 and 5.5 ppm) and vanadium (117 and 43 ppm) (appendix B); and tungsten (238 and 33 ppm, appendix A).

The veinlets in the Jasper Mine area contain high concentrations of manganese. However, the volume of material is small, probably less than 100 st. No resource for manganese was identified.

Another study (Hammarstrom and others (1988, p. 138) proposed that manganese occurrences in the Peloncillo Mountains may have formed from hot springs in tuff outflow sheets, and delineated a tract favorable for undiscovered epithermal manganese deposits which includes much of the Peloncillo Mountains Unit (plate 1).

Gold-silver-telluride or polymetallic vein locations

Select sample PE001 from the "Galena Pit" contained anomalous concentrations of silver (21.6 ppm), lead (5,236 ppm), and zinc (252 ppm) (appendix B).

Select samples PE002 and PE003 were taken from two silicified structures. These structures were the targets of drill holes GER-2 and GER-4. The samples showed no notable metallic concentrations.

Select sample PE004 was collected from silicified float between drill hole GER-4 and the Silver Tip main adit. It contained no notable metallic concentrations.

The Silver Tip main adit was sampled by rock-chip samples PE005-PE014 and PE016 (fig. 2, 3). Select sample PE015 was taken from the dump. Another select sample (PE017) was taken from a small stockpile near this adit.

Samples PE011 and PE013-PE017 stand out because they contain anomalous or elevated levels of gold and tellurium, suggesting the presence of gold or gold/silver telluride mineralization. Gold and tellurium concentrations ranged from 69 to 4,540 ppb and 160 to 1,400 ppm, respectively (appendix A). Silver concentrations in these samples ranged from 0.6 to 8.2 ppm (appendix B). Samples PE011 and PE013 also showed anomalous concentrations of mercury (89 and 44 ppm, respectively; appendix

B). Sample PE013 contained an anomalous concentration of molybdenum (452 ppm, appendix A).

Rock-chip samples PE018 and PE019 were taken at the secondary Silver Tip adit (fig. 4). Gold content was only at trace levels, about 56 ppb (appendix A). Sample PE018 also contained 160 ppm molybdenum (appendix A).

Samples PE006-PE019 were originally taken for the RARE II study, and were re-analyzed for this study. Metal concentrations reported by Brown (1980) ranged from undetected (0.01 oz/st lower detection limit) to 0.11 oz/st for gold and undetected (0.2 oz/st lower detection limit) to 0.6 oz/st for silver. These results agree roughly with analyses done for this study; slightly higher (about 0.01 oz/st) gold concentrations in samples PE011 and PE015 - PE017 were detected by the more recent analysis.

The samples taken from the vein of the Silver Tip Mine main adit have an average gold concentration of 0.01 oz/st. The estimated extensions of the 10-ft wide vein are 100 ft on strike and 75 ft along dip. The remaining tonnage of the ore body is about 6,000 st. An estimated 360 st had already been mined.

At $350/oz, the probable value of ore taken was about $1,260. The in situ value of the remaining deposit is estimated to be $21,000. The size and grade of the Silver Tip deposit indicate that it would be a sub-economic resource for gold.

Gold-bearing silicified structures may exist in the area south of the Silver Tip Mine. This area would be a reasonable location for further exploration. The area has been recognized as having mineral potential by both the RARE II (plate 1) and Superior Oil investigations. However, Superior Oil did not conduct drilling on their claims in this area, due to lack of time and capital resources. Some rock-chip and select samples

from known silicified structures, analyzed for this study, showed anomalous or elevated concentrations of one or more of the following: gold, silver, lead, zinc, molybdenum, mercury, and tellurium. Limited drilling into areas of silicification could prove or disprove the existence of mineral resources.

Evidence for acid-sulfate hydrothermal systems in the Peloncillo Mountains Unit led to delineation of a large area favorable for undiscovered epithermal vein deposits (plate 1), including Creede-type deposits (lead-silver-gold, with copper and zinc) (Hammarstrom and others, 1988, p. 138).

### Molybdenum

No workings were developed for molybdenum. A geochemical signature suggestive of Climax-type molybdenum deposits was found in panned-concentrate samples around the Geronimo Trail caldera, and led to the delineation of an area favorable for undiscovered molybdenum deposits (plate 1) (Hammarstrom and others, 1988, p. 138). Other reported geochemical evidence was used to postulate a buried igneous stock or volcanic cauldron with a genetic affinity for tin-molybdenum mineralization (Hayes and others, 1983, p. 5). Most of that geochemically-anomalous area is within the Roadless Areas. USBM rock-chip samples from the Bunk Robinson Peak Roadless Area were re-assayed for the current study. The maximum molybdenum concentrations in them were 534 ppm Mo (PE013) and 180 ppm Mo (PE018) (see appendix B). Two samples from drill site GER-3 reportedly contained 235 ppm Mo (ADMMR data on the Silver Tip Mine, unpub.).

### Dimension stone

No resource for dimension stone was identified at the Ligier Tufa Mine. The rock is commonplace in the area, is of unsuitable quality, and is, in general,

unremarkable. Also, the rock exposed in the prospect is a pinkish tuff common to the area, and not tufa (a chemically deposited $CaCO_3$ or $SiO_4$ rock), as the name implies. The nearest point of consumption (Douglas, Arizona) is about 40 mi over unimproved roads.

### RARE II study results

In addition to rock-chip and select samples (PE006-PE019), 42 panned-concentrate samples were taken in and around the Roadless Areas by USBM personnel (Brown, 1980). The samples were assayed for gold and silver. Gold was undetected at a 0.01 oz/st lower detection limit; silver concentrations ranged from undetected (0.2 oz/st lower detection limit) to 1.0 oz/st.

USGS personnel collected 116 panned-concentrate samples in the same area (Watts and others, 1983). The samples were analyzed by a 31 element geochemical suite. Gold and silver were undetected at lower detection limits of 0.58 oz/st and 0.03 oz/st, respectively.

Watts and others concluded that indications of mineralizing hydrothermal activity over an approximately 1 $mi^2$ area (plate 1) suggest the potential for undiscovered mineral resources for base and possibly precious metals at depth. The area is located at the edge of the Bunk Robinson Peak Roadless Area, southeast of the Silver Tip Mine, in section 35, T. 22 S., R. 32 E., Arizona, and on adjoining unsurveyed land to the east and northeast in New Mexico (Hayes and others, 1983, figure 2).

## CONCLUSIONS

No proven economic mineral resources have been determined by this study in the Peloncillo Mountains unit. However, a sub-economic resource for gold exists at the Silver Tip Mine. A reasonable location for future activity is the area south of the

Silver Tip Mine, where there may be additional gold-bearing silicified structures. If promising structures are found, a limited drilling program would be required to determine size and grade.

Two occurrences of epithermal manganese veins crop out near the Jasper Mine. No future activity is likely because of the small volume (no more than 100 st) of mineralized material.

The rock unit at the Ligier Tufa Mine is of rather ordinary quality, and is generally unsuited for use as dimension stone. No resource was determined for this commodity, and no future activity is foreseen.

No exploration for base and precious metals is expected under current economic conditions. The expected size of ore bodies, considering the type of mineralized structures, and assuming that the Silver Tip Mine is fairly typical, would probably be less than 10,000 st. This size of deposit would not likely constitute a resource for commodities such as silver or base metals.

In addition, any future mining activity would likely be limited to areas outside the Roadless Areas. This restriction greatly reduces the area of land open to mineral exploration, further reducing the likelihood of future mining activity in the study area.

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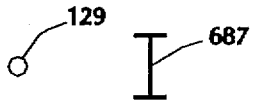
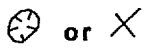
EXPLANATION OF SYMBOLS FOR REPORT FIGURES, INCLUDING:
Features of detailed mine maps, both surface and underground, at various scales (larger than 1:24,000).

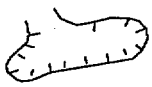



ROCK SAMPLE LOCALITY--Showing sample number

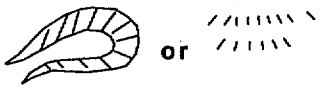
TRENCH




PITS

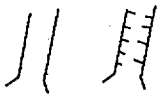


OPEN CUT

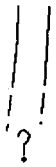



DUMPS

STOCKPILE

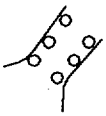


ADIT PORTAL (left);
ADIT PORTAL WITH TRENCH OR OPEN CUT (right)

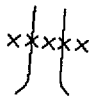



LEVEL WORKING--Dashed and/or queried where uncertain

INCLINED WORKING--Showing degree of inclination, chevrons pointing down; queried where uncertain or inaccessible



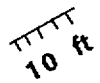
TIMBERED (Vertical timbers and/or lagging)



CAVED

RUBBLE (BACKFALL) FILLED, MUCK-FILLED, OR BACKFILLED WORKING--Queried where uncertain or inaccessible

EXPLANATION OF SYMBOLS FOR REPORT FIGURES, INCLUDING:
Features of detailed mine maps, both surface and underground, at various scales (larger than 1:24,000)--Continued.




STEP DOWN IN SILL--Showing drop in feet; hachures on down side

RAISE, head (left); RAISE, foot (right)

RAISE GOING UP AND WINZE GOING DOWN

WINZE--Noted if water filled

MANWAY (left); CHUTE (right)

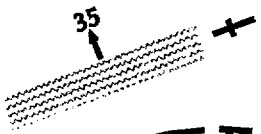
SHAFT, open at surface (left);
SHAFT, bottom (right)

PILLAR

GEOLOGIC SYMBOLS

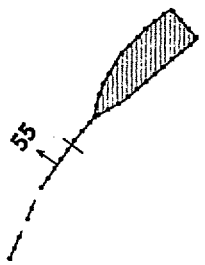
Strike and dip of bedding

Fault--Showing strike and dip (inclined or vertical, degrees); dashed where approximate




Fault zone or shear zone--Showing strike and dip (inclined or vertical, degrees); dashed where approximate

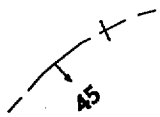
Thrust fault--Sawteeth on upthrown side




Vein--Showing strike and dip (inclined or vertical, degrees); dashed where approximate

EXPLANATION OF SYMBOLS FOR REPORT FIGURES, INCLUDING:
Features of detailed mine maps, both surface and underground, at various scales (larger than 1:24,000)--Continued.

## GEOLOGIC SYMBOLS—Continued

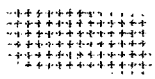



Contact--Showing strike and dip (inclined or vertical, degrees); dashed where approximate

Dike--Showing strike and dip (inclined or vertical, degrees); dashed where approximate

Shattered zones

Brecciated zones



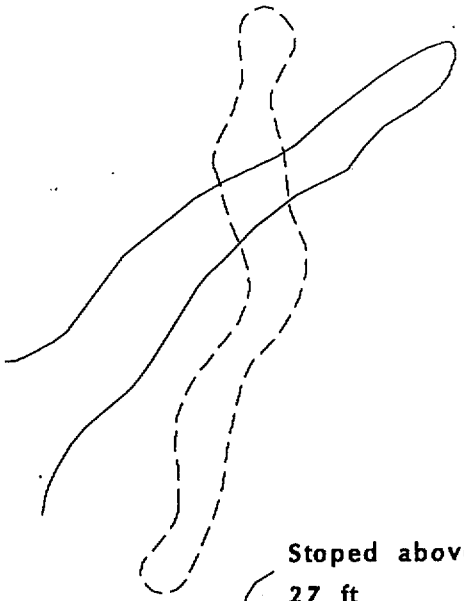
Igneous rock zone or structure

Mineralized zone, disseminated

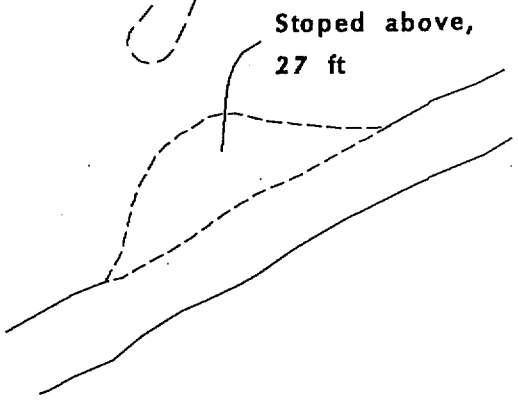
Mineralized zone, localized

Zone containing resources

EXPLANATION OF SYMBOLS FOR REPORT FIGURES, INCLUDING:
Features of detailed mine maps, both surface and underground, at various scales (larger than 1:24,000)--Continued.



Multiple level workings




Stope

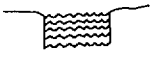
Symbols for vertical cross-section maps

Crosscut

Drift into facing wall

Drift into removed wall

Drift into facing and removed wall



Water-filled winze

EXPLANATION OF SYMBOLS FOR REPORT FIGURES AND PLATES, INCLUDING: Inset maps at various scales and 1:126,720-scale plates.

APPROXIMATE BOUNDARY OF THE FOREST MANAGEMENT AREA

APPROXIMATE BOUNDARY OF WILDERNESS

NATIONAL MONUMENT BOUNDARY

6000 TOPOGRAPHIC CONTOUR–Showing elevation in feet above sea level

STATE LINE

COUNTY LINE

PRIMARY SECONDARY ROADS

UNIMPROVED ROADS TRAILS

INTERMITTENT STREAMS

MINING CLAIM BOUNDARIES

GRID TICK MARK

PATENTED MINING CLAIM

SURFACE OPENINGS–Showing sample number(s); symbols may represent more than one working. Also, VARIOUS REPRESENTATIONS OF SAMPLE SITES:

616 Rock sample locality–Showing sample number

or or Adit open (left); Adit, inaccessible (right)

Trenches

Open cut

Glory hole, open pit, or quarry

EXPLANATION OF SYMBOLS FOR REPORT FIGURES AND PLATES, INCLUDING:
Inset maps at various scales and 1:126,720-scale plates–Continued.

SURFACE OPENINGS–Showing sample number(s);
symbols may represent more than one working. Also,
VARIOUS REPRESENTATIONS OF SAMPLE SITES–Continued:

846 — Prospect (pit, open cut, or small trench)

326-328 — Tunnel

Mine or quarry (active, left; inactive, right)

Placer mine or gravel pit (active, left; inactive, right)

Shaft, open to surface (left);
Shaft, inclined (right)

Shaft, water filled (left);
Shaft, caved (right)

R — Shaft, reclaimed

Mine dump

DHxxx — Drill hole collar

Appendix A - Neutron activation multi-element analytical data for rock-chip and select samples taken in the Peloncillo Mountains unit, 1980 and 1989 to 1992, as analyzed by Bondar-Clegg and Co., Ltd.

[<, less than]

| Sample No. | Ag (Ppm) | As (Ppm) | Au (Ppb) | Ba (Ppm) | Br (Ppm) | Cd (Ppm) | Ce (Ppm) | Co (Ppm) | Cr (Ppm) | Cs (Ppm) | Eu (Ppm) | Fe (Pct) | Hf (Ppm) | Ir (Ppb) | La (Ppm) | Lu (Ppm) | Mo (Ppm) | Na (Pct) | Ni (Ppm) | Rb (Ppm) | Sb (Ppm) | Sc (Ppm) | Se (Ppm) | Sm (Ppm) | Sn (Ppm) | Ta (Ppm) | Tb (Ppm) | Te (Ppm) | Th (Ppm) | U (Ppm) | W (Ppm) | Yb (Ppm) | Zn (Ppm) | Zr (Ppm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PE001 | 19 | 39 | 33 | 190 | 6 | < 10 | 54 | < 10 | 91 | < 1 | < 2 | 2.4 | 4 | < 100 | 25 | < 0.5 | < 2 | 0.10 | < 50 | 32 | 55.3 | 4.6 | < 10 | 3.1 | < 200 | 1 | < 1 | < 20 | 18.0 | 5.3 | 3 | < 5 | 380 | < 500 |
| PE002 | < 5 | 7 | < 5 | 900 | < 1 | < 10 | 84 | < 10 | 81 | 2 | < 2 | 1.6 | 6 | < 100 | 37 | < 0.5 | < 2 | 0.45 | < 50 | 49 | 5.7 | 4.1 | < 10 | 4.5 | < 200 | 1 | < 1 | < 20 | 14.0 | 3.7 | < 2 | < 5 | < 200 | < 500 |
| PE003 | < 5 | 4 | < 5 | 610 | < 1 | < 10 | 73 | < 10 | 120 | 4 | < 2 | 0.6 | 5 | < 100 | 42 | < 0.5 | 3 | 1.50 | < 50 | 210 | 13.0 | 4.5 | < 10 | 5.1 | < 200 | 1 | < 1 | < 20 | 19.0 | 5.4 | 3 | < 5 | < 200 | < 500 |
| PE004 | < 5 | 9 | 12 | 670 | < 1 | < 10 | 38 | < 10 | 140 | 1 | < 2 | 1.1 | 5 | < 100 | 21 | < 0.5 | 5 | 0.34 | < 50 | 60 | 10.0 | 2.6 | < 10 | 2.6 | < 200 | 2 | < 1 | < 20 | 13.0 | 6.1 | 3 | < 5 | < 200 | < 500 |
| PE005 | < 5 | 14 | 9 | 7500 | < 1 | < 10 | 10 | < 10 | < 50 | 2 | < 2 | 1.9 | < 2 | < 100 | 8 | < 0.5 | < 2 | 0.06 | < 50 | < 10 | 2.2 | 1.0 | < 10 | 1.2 | < 200 | < 1 | < 1 | < 20 | 0.7 | 1.7 | < 2 | < 5 | < 200 | < 500 |
| PE006 | < 5 | 5 | 6 | 1400 | < 1 | < 10 | 160 | < 10 | < 50 | 4 | < 2 | 2.7 | 9 | < 100 | 71 | < 0.5 | 13 | 2.80 | < 20 | 210 | 2.5 | 6.7 | < 10 | 6.7 | < 200 | 1 | < 1 | < 20 | 18.0 | 4.3 | 4 | < 5 | < 200 | 520 |
| PE007 | < 5 | 2 | < 5 | 1400 | < 1 | < 10 | 150 | < 10 | < 50 | 4 | < 2 | 2.6 | 9 | < 100 | 74 | < 0.5 | 4 | 3.00 | < 20 | 220 | 1.6 | 7.8 | < 10 | 8.2 | < 200 | 2 | < 1 | < 20 | 18.0 | 4.4 | 2 | < 5 | 260 | < 500 |
| PE008 | < 5 | 5 | 5 | 1400 | < 1 | < 10 | 140 | < 10 | < 50 | 10 | 3 | 3.2 | 9 | < 100 | 69 | < 0.5 | 35 | 2.20 | < 20 | 210 | 3.9 | 7.3 | < 10 | 7.3 | < 200 | 2 | < 1 | < 20 | 16.0 | 3.4 | < 2 | < 5 | < 200 | < 500 |
| PE009 | < 5 | 3 | 22 | 1500 | < 1 | < 10 | 160 | 10 | < 50 | 4 | 3 | 3.3 | 9 | < 100 | 74 | < 0.5 | < 2 | 2.90 | < 20 | 210 | 2.1 | 7.8 | < 10 | 7.9 | < 200 | < 1 | 1 | < 20 | 18.0 | 4.0 | 6 | < 5 | < 200 | < 500 |
| PE010 | < 5 | 3 | < 5 | 1600 | < 1 | < 10 | 150 | < 10 | < 50 | 3 | 2 | 3.3 | 10 | < 100 | 71 | < 0.5 | 3 | 3.20 | < 20 | 220 | 1.8 | 7.8 | < 10 | 7.4 | < 200 | 1 | < 1 | < 20 | 18.0 | 3.9 | < 2 | < 5 | < 200 | < 500 |
| PE011 | 10 | 9 | 1470 | 210 | 1 | < 10 | 120 | < 10 | < 50 | 3 | < 2 | 1.4 | 8 | < 100 | 56 | < 0.5 | 6 | 0.06 | < 20 | 50 | 13.0 | 5.5 | < 10 | 5.2 | < 200 | 1 | < 1 | 1400 | 17.0 | 19.0 | 4 | < 5 | < 200 | < 500 |
| PE012 | < 5 | 24 | 20 | 840 | < 1 | < 10 | 190 | < 10 | < 50 | 15 | < 2 | 1.5 | 9 | < 100 | 81 | < 0.5 | < 2 | 0.16 | < 20 | 260 | 6.6 | 7.1 | < 10 | 8.4 | < 200 | 1 | < 1 | < 20 | 21.0 | 6.6 | 2 | 5 | < 200 | < 500 |
| PE013 | < 5 | 29 | 69 | 450 | 1 | < 10 | 120 | < 10 | < 50 | 6 | < 2 | 2.2 | 8 | < 100 | 56 | < 0.5 | 452 | 0.13 | < 20 | 130 | 22.5 | 5.8 | < 10 | 5.7 | < 200 | < 1 | < 1 | 190 | 15.0 | 5.3 | < 2 | < 5 | < 200 | < 500 |
| PE014 | < 5 | 23 | 250 | 720 | 2 | < 10 | 150 | < 10 | < 50 | 10 | 2 | 1.8 | 9 | < 100 | 67 | < 0.5 | 18 | 0.26 | < 20 | 310 | 6.3 | 6.4 | < 10 | 7.5 | < 200 | 1 | < 1 | 160 | 21.0 | 6.1 | 2 | 5 | < 200 | < 500 |
| PE015 | < 5 | 14 | 4540 | 810 | 1 | < 10 | 130 | < 10 | < 50 | 7 | < 2 | 1.9 | 9 | < 100 | 59 | < 0.5 | 4 | 0.30 | < 20 | 180 | 9.0 | 5.7 | < 10 | 6.7 | < 200 | 1 | < 1 | 280 | 19.0 | 7.4 | 4 | < 5 | < 200 | < 500 |
| PE016 | 6 | 13 | 579 | 670 | 2 | < 10 | 77 | < 10 | < 50 | 2 | < 2 | 1.8 | 7 | < 100 | 34 | < 0.5 | 20 | < 0.05 | < 20 | < 10 | 13.0 | 3.3 | < 10 | 4.3 | < 200 | 1 | < 1 | 610 | 16.0 | 5.6 | 3 | < 5 | < 200 | < 500 |
| PE017 | 5 | 34 | 1250 | 490 | 2 | < 10 | 92 | < 10 | < 50 | 6 | < 2 | 1.8 | 5 | < 100 | 39 | < 0.5 | 8 | 0.27 | < 20 | 270 | 10.0 | 3.6 | < 10 | 4.4 | < 200 | 2 | < 1 | 230 | 20.0 | 5.9 | < 2 | < 5 | < 200 | < 500 |
| PE018 | < 5 | 53 | 54 | 230 | 2 | < 10 | 71 | < 10 | < 50 | 8 | < 2 | 1.4 | 5 | < 100 | 33 | < 0.5 | 160 | 0.31 | < 20 | 460 | 8.4 | 2.6 | < 10 | 3.8 | < 200 | 2 | < 1 | < 20 | 23.0 | 7.9 | < 2 | < 5 | < 200 | < 500 |
| PE019 | < 5 | 66 | 58 | 330 | 2 | < 10 | 77 | < 10 | < 50 | 10 | < 2 | 1.7 | 5 | < 100 | 36 | < 0.5 | < 2 | 0.45 | < 20 | 490 | 6.0 | 3.4 | < 10 | 3.8 | < 200 | 2 | < 1 | < 20 | 23.0 | 5.2 | < 2 | < 5 | < 200 | < 500 |
| PE020 | < 5 | 26 | < 5 | 7400 | 2 | < 10 | 140 | 23 | 150 | 11 | < 2 | 0.9 | 9 | < 100 | 67 | < 0.5 | 22 | 0.85 | < 20 | 180 | 18.0 | 2.2 | < 10 | 9.1 | < 200 | 1 | 1 | < 20 | 14.0 | 18.0 | 238 | 9 | < 200 | < 500 |
| PE021 | < 5 | 75 | < 5 | 2500 | 1 | < 10 | 44 | < 10 | 370 | 2 | < 2 | 3.5 | 2 | < 100 | 13 | < 0.5 | 5 | 0.22 | 29 | 16 | 3.3 | 1.2 | < 10 | 1.9 | < 200 | < 1 | < 1 | < 20 | 2.0 | 12.0 | 33 | 5 | < 200 | < 500 |

Appendix B - Inductively coupled plasma-atomic emission spectroscopy multi-element analytical data for rock-chip and select samples taken in the Peloncillo Mountains unit, 1980 and 1989 to 1992, as analyzed by Chemex Labs, Inc.

[<, less than; >, greater than]

| Sample No. | Ag (Ppm) | Al (Pct) | As (Ppm) | Ba (Ppm) | Be (Ppm) | Bi (Ppm) | Ca (Pct) | Cd (Ppm) | Co (Ppm) | Cr (Ppm) | Cu (Ppm) | Fe (Pct) | Ga (Ppm) | Hg (Ppm) | K (Pct) | La (Ppm) | Mg (Pct) | Mn (Ppm) | Mo (Ppm) | Na (Pct) | Ni (Ppm) | P (Ppm) | Pb (Ppm) | Sb (Ppm) | Sc (Ppm) | Sr (Ppm) | Ti (Pct) | Tl (Ppm) | U (Ppm) | V (Ppm) | W (Ppm) | Zn (Ppm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PE001 | 21.6 | 0.39 | 25 | 50 | < 0.5 | < 2 | 0.08 | 2.5 | 1 | 86 | 53 | 2.76 | < 10 | 4 | 0.03 | < 10 | 0.01 | 30 | < 1 | 0.02 | 3 | 70 | 5236 | 50 | < 1 | 226 | <0.01 | < 10 | < 10 | 7 | < 10 | 252 |
| PE002 | 0.2 | 0.62 | 10 | 530 | < 0.5 | < 2 | 0.17 | < 0.5 | 5 | 63 | 9 | 1.40 | < 10 | 2 | 0.09 | < 10 | 0.07 | 50 | 1 | 0.02 | 2 | 140 | 14 | 15 | 1 | 954 | <0.01 | < 10 | < 10 | 10 | < 10 | 18 |
| PE003 | 1.2 | 0.56 | 5 | 150 | 0.4 | < 2 | 0.21 | < 0.5 | 2 | 75 | 9 | 0.86 | 10 | < 1 | 0.18 | 20 | 0.18 | 110 | 2 | 0.03 | 2 | 210 | 30 | 5 | 1 | 30 | 0.02 | < 10 | < 10 | 7 | < 10 | 20 |
| PE004 | 1.0 | 0.39 | 5 | 370 | < 0.5 | < 2 | 0.34 | < 0.5 | 3 | 109 | 16 | 1.23 | < 10 | 6 | 0.12 | 10 | 0.04 | 55 | 3 | 0.02 | 6 | 70 | 24 | 10 | < 1 | 2224 | <0.01 | < 10 | < 10 | 13 | < 10 | 18 |
| PE005 | < 0.2 | 0.42 | 5 | 3390 | < 0.5 | < 2 | >15.00 | 0.5 | 6 | 8 | 58 | 1.07 | < 10 | < 1 | 0.07 | < 10 | 1.86 | 1375 | < 1 | 0.01 | 4 | 80 | 68 | 345 | 1 | 702 | <0.01 | < 10 | < 10 | 7 | < 10 | 32 |
| PE006 | 0.4 | 0.65 | < 2 | 170 | 1.5 | 6 | 0.22 | < 0.5 | 6 | 9 | 11 | 2.18 | 10 | < 1 | 0.21 | 40 | 0.19 | 205 | 16 | 0.06 | 7 | 410 | 14 | < 2 | 1 | 59 | 0.02 | < 10 | < 10 | 20 | < 10 | 38 |
| PE007 | < 0.2 | 0.79 | < 2 | 130 | 1.5 | 6 | 0.42 | < 0.5 | 7 | 6 | 11 | 2.01 | 10 | 3 | 0.18 | 40 | 0.35 | 205 | 3 | 0.06 | 2 | 500 | 8 | < 2 | 1 | 20 | 0.02 | 20 | < 10 | 23 | < 10 | 54 |
| PE008 | 0.8 | 0.76 | < 2 | 230 | 1.0 | 12 | 1.67 | 0.5 | 2 | 7 | 12 | 2.41 | < 10 | 1 | 0.21 | 30 | 0.27 | 320 | 28 | 0.05 | 1 | 880 | 24 | < 2 | < 1 | 57 | 0.01 | < 10 | 10 | 14 | < 10 | 42 |
| PE009 | 0.6 | 1.01 | < 2 | 120 | 1.5 | 10 | 1.43 | 0.5 | 4 | 12 | 13 | 2.21 | 10 | 3 | 0.22 | 40 | 0.79 | 445 | 3 | 0.05 | 2 | 1410 | 8 | < 2 | 2 | 30 | 0.03 | < 10 | 10 | 31 | < 10 | 52 |
| PE010 | 0.2 | 1.02 | < 2 | 140 | 1.5 | 24 | 0.50 | < 0.5 | 5 | 11 | 12 | 2.51 | 10 | 8 | 0.43 | 40 | 0.52 | 270 | 6 | 0.05 | 3 | 4030 | 16 | 6 | 3 | 19 | 0.03 | 20 | < 10 | 39 | < 10 | 56 |
| PE011 | 8.2 | 0.55 | < 2 | 160 | 0.5 | 24 | 0.25 | 0.5 | < 1 | 14 | 16 | 1.22 | < 10 | 89 | 0.11 | < 10 | 0.02 | 65 | 9 | 0.01 | 6 | 90 | 70 | < 2 | < 1 | 28 | <0.01 | < 10 | 30 | 4 | < 10 | 36 |
| PE012 | 0.2 | 0.74 | 6 | 290 | 0.5 | 18 | 0.39 | 0.5 | 6 | 7 | 9 | 1.12 | < 10 | 1 | 0.35 | < 10 | 0.04 | 15 | 1 | 0.01 | 2 | 150 | 24 | < 2 | < 1 | 95 | <0.01 | < 10 | < 10 | 5 | < 10 | 28 |
| PE013 | 0.6 | 0.50 | 24 | 190 | 1.0 | 12 | 0.16 | < 0.5 | 3 | 2 | 39 | 2.05 | 10 | 44 | 0.20 | 10 | 0.02 | 55 | 534 | 0.02 | 3 | 150 | < 2 | 8 | < 1 | 36 | <0.01 | < 10 | 10 | 9 | < 10 | 44 |
| PE014 | 1.0 | 0.71 | 16 | 90 | 0.5 | 30 | 0.17 | 0.5 | 2 | 5 | 15 | 1.33 | < 10 | 4 | 0.18 | 30 | 0.06 | 30 | 17 | 0.01 | < 1 | 180 | 36 | < 2 | < 1 | 116 | <0.01 | < 10 | 10 | 8 | < 10 | 38 |
| PE015 | 3.6 | 1.02 | 20 | 300 | 1.0 | 16 | 0.15 | < 0.5 | 1 | 10 | 24 | 1.47 | < 10 | < 1 | 0.20 | 10 | 0.10 | 100 | 3 | 0.01 | < 1 | 210 | 42 | 4 | 1 | 77 | <0.01 | < 10 | < 10 | 10 | < 10 | 52 |
| PE016 | 5.4 | 0.29 | < 2 | 480 | < 0.5 | 32 | 0.03 | < 0.5 | 2 | 18 | 21 | 1.54 | < 10 | 10 | 0.03 | < 10 | 0.01 | 70 | 17 | 0.01 | 7 | 100 | 56 | < 2 | < 1 | 16 | <0.01 | < 10 | 10 | 4 | 10 | 26 |
| PE017 | 3.8 | 0.62 | 28 | 270 | 0.5 | 16 | 0.11 | < 0.5 | 4 | 11 | 28 | 1.51 | < 10 | 5 | 0.19 | 10 | 0.06 | 95 | 7 | 0.02 | 6 | 160 | 40 | < 2 | < 1 | 44 | <0.01 | < 10 | < 10 | 9 | < 10 | 40 |
| PE018 | 1.6 | 0.51 | 44 | 10 | 0.5 | 2 | 0.30 | < 0.5 | 6 | < 1 | 29 | 1.16 | < 10 | < 1 | 0.16 | 20 | 0.10 | 155 | 180 | 0.03 | 3 | 100 | 20 | 8 | < 1 | 19 | <0.01 | < 10 | 20 | 13 | < 10 | 62 |
| PE019 | 3.2 | 0.32 | 48 | 20 | 0.5 | 14 | 0.12 | 1.0 | 1 | 6 | 27 | 1.30 | < 10 | 7 | 0.25 | 20 | 0.05 | 45 | 1 | 0.01 | 6 | 230 | 26 | 6 | < 1 | 50 | <0.01 | < 10 | 10 | 10 | < 10 | 38 |
| PE020 | < 0.2 | 1.06 | 22 | 6470 | 5.0 | < 2 | 0.49 | < 0.5 | 33 | 84 | 21 | 1.11 | 10 | 7 | 0.35 | 80 | 0.24 | >10000 | 28 | 0.08 | 7 | 310 | 66 | 6 | 2 | 452 | 0.04 | < 10 | < 10 | 117 | 230 | 58 |
| PE021 | 0.2 | 0.69 | 80 | 2320 | 5.5 | < 2 | 0.32 | < 0.5 | 9 | 201 | 17 | 3.42 | < 10 | 3 | 0.09 | 10 | 0.12 | >10000 | 7 | 0.04 | 12 | 170 | 50 | < 2 | 1 | 251 | 0.01 | < 10 | < 10 | 43 | 20 | 36 |

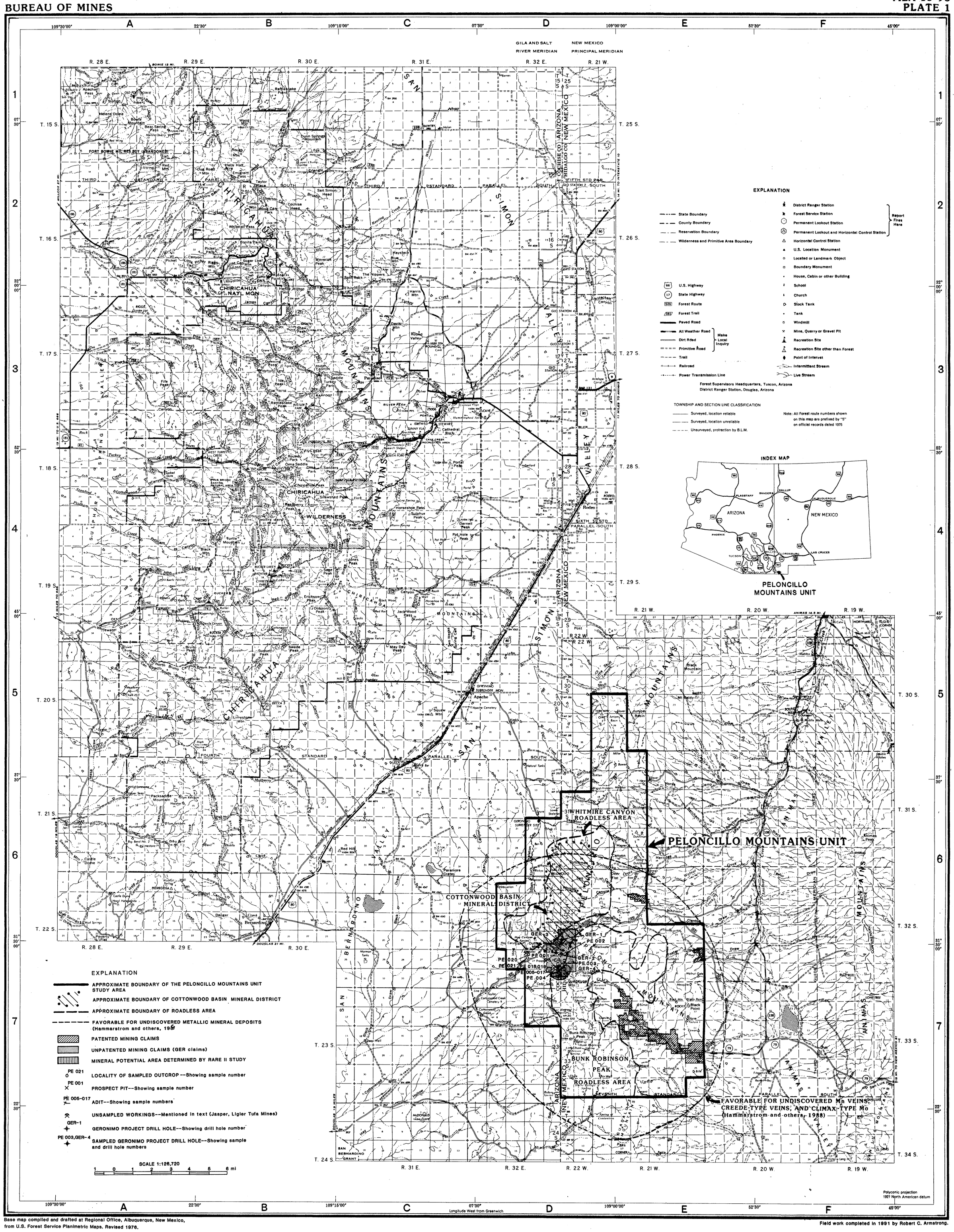
Appendix C - Sample description data for rock-chip and select samples taken in the Peloncillo Mountains unit, 1980 and 1989 to 1992. Sample numbers for re-analyzed RARE II sample pulps are given in parentheses.

[xx, not applicable]

| Number | Type | Length | Remarks |
|---|---|---|---|
| PE001 | Select | xx | From "Galena Pit"; clay-altered and iron oxide-stained tuff; trace gray silica. |
| PE002 | Select | xx | From area above drill hole GER-2; mostly varicolored fumarolic/deuteric/iron oxide-stained tuff with little or no alteration; some pieces gray silica. |
| PE003 | Select | xx | From drill pad of drill hole GER-4; slightly altered (mineralized?) volcanics (tuff?). |
| PE004 | Select | xx | From area between drill hole GER-4 and main Silver Tip adit; high-grade quartz, jasperoid and deuterically altered tuff. |
| PE005 | Chip | 15 ft | Across structure above portal of main adit; moderate-strong iron oxide staining, probable pyrite, jarosite or native sulfur. |
| PE006 (BRW49) | Chip | 8 ft | Across back at portal of main adit; altered, fractured and sheared volcanic rock. |
| PE007 (BRW42) | Chip | 4 ft | Across fracture on right rib; thin shears; fault gouge; strong iron oxide stain; altered volcanic rock. |
| PE008 (BRW43) | Chip | 3 ft | Across 3 ft thick white and iron-stained fault zone and clayey gouge; disseminated pyrite; country rock is dark gray volcanic porphyry. |
| PE009 (BRW44) | Chip | 3 ft | Across fault/alteration zone to 1 ft thick on left rib; with white and iron oxide-stained gouge, disseminated pyrite. |
| PE010 (BRW45) | Chip | 1.5 ft | Across fault zone in back with several centimeters of iron oxide- and sulfur-stained gouge; country rock is dark gray volcanic porphyry. |
| PE011 (BRW46) | Chip | 3 ft | Across back in main fault zone; thick, altered country rock and iron oxide-stained, clayey gouge; embedded chunks of siliceous country rock; vugs with secondary quartz crystals, sulfur stain. |

Appendix C - Sample description data for rock-chip and select samples taken in the Peloncillo Mountains unit, 1980 and 1989 to 1992. Sample numbers for re-analyzed RARE II sample pulps are given in parentheses-Continued.

| Number | Type | Length | Remarks |
|---|---|---|---|
| PE012 (BRW47) | Chip | 3 ft | Across back in main fault zone; thick, altered country rock and iron oxide-stained, clayey gouge; embedded chunks of siliceous country rock; vugs with secondary quartz crystals, sulfur stain. |
| PE013 (BRW48) | Chip | 5 ft | See sample PE012. |
| PE014 (BRW21) | Chip | 4 ft | Across 10 ft main fault zone at shaft opening; clayey gouge. |
| PE015 (BRW22) | Select | xx | From waste dump at shaft; mostly altered, silicified, volcanic rock with disseminated pyrite and arsenopyrite. |
| PE016 (BRW23) | Chip | 4 ft | In small prospect; across main fault zone; altered, fractured, volcanic rock; some gouge; iron oxide and sulfur stain. |
| PE017 (BRW24) | Select | xx | From ore stockpile near creek; altered, silicified, volcanic rock; varying amounts of iron oxide and sulfur staining; disseminated pyrite and arsenopyrite. |
| PE018 (BRW08) | Chip | 3.5 ft | At face of Silver Tip secondary adit; white, siliceous, rhyolite tuff; shear zone 1.5 ft thick. |
| PE019 (BRW10) | Chip | 3 ft | Across portal of secondary adit; two narrow shear zones in white rhyolite tuff; moderate iron oxide staining. |
| PE020 | Select | xx | From area of heavily manganese-mineralized fracture-filling and stringers; includes 50% black mineralized material, with occasional quartz-filled vugs and rock fragments; 50% pink/gray rhyolitic tuff country rock, with 3% quartz, 1% biotite as phenocrysts, 1% rock fragments. |
| PE021 | Select | xx | From area of heavily manganese-mineralized fracture-filling in stringers; black mineralized material, with occasional quartz-filled vugs and rock fragments. Country rock (not in sample) is weakly altered tuff. |




Base map compiled and drafted at Regional Office, Albuquerque, New Mexico, from U.S. Forest Service Planimetric Maps. Revised 1976.

Field work completed in 1991 by Robert C. Armstrong.

# SAMPLE LOCALITY MAP OF THE PELONCILLO MOUNTAINS UNIT, CORONADO NATIONAL FOREST, COCHISE COUNTY, ARIZONA, AND HIDALGO COUNTY, NEW MEXICO

BY
ROBERT C. ARMSTRONG, U.S. BUREAU OF MINES

1993