MINERAL APPRAISAL OF CORONADO NATIONAL FOREST, PART 9

Galiuro Mountains Unit
Graham County, Arizona

BUREAU OF MINES
UNITED STATES DEPARTMENT OF THE INTERIOR
November 22, 1993

Nyal Niemuth
Arizona Department of Mines and
Mineral Resources
1502 West Washington
Phoenix, AZ 85007

Dear Mr. Niemuth:

Enclosed are two copies of the following U.S. Bureau of Mines Open File Report for your use:

MLA 21-93 Mineral Appraisal of the Coronado National Forest, Part 9, Galiuro Mountains Unit, Graham County, Arizona

If you would like additional copies, please notify Mark Chatman at 303-236-3400.

Sincerely,

George R. Schottler, Chief
Resource Evaluation Branch
MINERAL APPRAISAL OF THE CORONADO NATIONAL FOREST

PART 9, GALIULO MOUNTAINS UNIT,
GRAHAM COUNTY, ARIZONA

by

S. Don Brown

MLA 21-93
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, 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 Bureau’s mineral resource data base 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 open-file report summarizes the results of a Bureau of Mines forest-wide study. The report is preliminary and has not been edited or reviewed for conformity with the Bureau of Mines editorial standards. This study was conducted by personnel from the Intermountain Field Operations Center, Building 20, Denver Federal Center, Denver, CO 80225.
## CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUMMARY</td>
<td>1</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>2</td>
</tr>
<tr>
<td>Geographic setting</td>
<td>2</td>
</tr>
<tr>
<td>Previous investigations</td>
<td>2</td>
</tr>
<tr>
<td>Methods of investigation</td>
<td>4</td>
</tr>
<tr>
<td>Geologic setting</td>
<td>5</td>
</tr>
<tr>
<td>Mining history</td>
<td>6</td>
</tr>
<tr>
<td>MINERAL APPRAISAL</td>
<td>7</td>
</tr>
<tr>
<td>Northern Galiuro Mountains</td>
<td>7</td>
</tr>
<tr>
<td>Rattlesnake mining district</td>
<td>7</td>
</tr>
<tr>
<td>Upper Rattlesnake Creek</td>
<td>8</td>
</tr>
<tr>
<td>Powers Mine</td>
<td>8</td>
</tr>
<tr>
<td>Long Tom Mine</td>
<td>8</td>
</tr>
<tr>
<td>Sixteen-to-One Mine</td>
<td>9</td>
</tr>
<tr>
<td>Southern Galiuro Mountains</td>
<td>9</td>
</tr>
<tr>
<td>CONCLUSIONS</td>
<td>10</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>11</td>
</tr>
<tr>
<td>Appendix A--Data for samples from the Galiuro Mountains Unit, Coronado National Forest, Cochise County, Arizona</td>
<td>12</td>
</tr>
<tr>
<td>B--Inductively coupled plasma-atomic emission spectroscopy multi-element analytical data for samples analyzed by Chemex Labs, Inc</td>
<td>15</td>
</tr>
<tr>
<td>C--Neutron activation multi-element analytical data for samples analyzed by Bondar-Clegg &amp; Company Ltd</td>
<td>17</td>
</tr>
<tr>
<td>D--Data for individual mines and prospects in the Galiuro Mountains Unit, Coronado National Forest, Cochise County, Arizona</td>
<td>19</td>
</tr>
<tr>
<td>E--Mine location and mine map figures for the Galiuro Mountains Unit, Coronado National Forest, Cochise County, Arizona</td>
<td>31</td>
</tr>
</tbody>
</table>
ILLUSTRATIONS

Plate 1. Sample locality map of the Galiuro Mountains Unit, Coronado National Forest, Cochise County, Arizona .......................... back

Figure 1. Index map of the Galiuro Mountains Unit, Coronado National Forest, Graham County, Arizona ................................. 3

Figures 2-11, maps of:

2. Prospects at the north end of the Galiuro Mountains showing sample localities GA 2-7 .................................................. 32

3. Mines and prospects near Rattlesnake Creek showing sample localities GA 8-23 .................................................. 33

4. Adit adjacent to Rattlesnake Creek showing sample localities GA 8-10 .................................................. 34

5. Adit adjacent to Rattlesnake Creek showing sample localities GA 11-21 .................................................. 35

6. Powers Mine ................................................................. 36

7. Long Tom Mine ............................................................... 37

8. Sixteen-to-One Mine .......................................................... 38

9. Sixteen-to-One Mine, northern adits ........................................ 39

10. Sixteen-to-One Mine, southern adits ........................................ 40

11. Mines and prospects in the southern part of the Galiuro Mountains .................................................. 41
UNIT OF MEASURE ABBREVIATIONS USED IN THIS REPORT

$ dollar (U.S.)
ft foot
lb pound
mi² square miles
mi mile
% percent
oz troy ounce
ppb part per billion
ppm part per million
st short ton (2,000 lb)
MINERAL APPRAISAL OF THE CORONADO NATIONAL FOREST
PART 9, GALIURO MOUNTAINS UNIT, GRAHAM COUNTY, ARIZONA

by

S. Don Brown, U.S. Bureau of Mines

SUMMARY

Between 1990 and 1992, the Bureau of Mines reviewed the mining history and studied the mineral resources of the Galiuro Mountains unit of the Coronado National Forest to appraise the mineral resources and to identify and describe areas with past mining activity. The study included a comprehensive literature search combined with a field investigation of mines, prospects, and mineralized areas where literature was incomplete or lacking. This study is part of the Bureau's overall mineral evaluation of the Coronado National Forest and will be included in a summary report of the Forest.

Inside the Forest the Galiuro Mountains are underlain by young, relatively unmineralized volcanic rocks, making an assessment of mineral resources at depth in older, potentially mineralized formations difficult. No mineral resources were identified in the Forest during this study or during previous studies by others. The only known current mining activity is at a fire agate mine in the northeast part of the Forest. The Copper Creek mining district, adjacent to the northwest part of the Forest, had a substantial amount of base and precious metal production from older rocks not exposed in the Forest. The Rattlesnake mining district, near the central part of the study area, produced a small amount of gold, silver, and copper between the years 1908-1940.
INTRODUCTION

During 1990-1992, the Bureau of Mines studied the mineral resources of the Galiuro Mountains on land administered by the U.S. Forest Service. This study is part of the Bureau's overall mineral evaluation of the Coronado National Forest.

Geographic setting

The Galiuro Mountains include 138,246 acres (216 mi²) of the Coronado National Forest, in Graham County, southeastern Arizona (fig. 1). The majority of the Forest is inside the Galiuro Wilderness which encompasses 76,317 acres or about 55% of the Forest Unit (plate 1). The nearest major communities to the range include Pima, Thatcher, and Safford to the northeast, Willcox to the southeast, Benson to the south, and Mammoth and San Manuel to the west. Sulphur Springs Valley is on the southeast side of the range, Aravaipa Canyon is on the north and northeast side, and the San Pedro Valley parallels the west side. Elevations inside the Forest range from 3,480 ft on the west side to 7,663 ft at Bassett Peak in the southern end.

An unnamed all-weather road is north and northeast of the Forest, the Aravaipa road is northeast and east of the Forest, State Highways 76 and 77 are west of the Forest, and an unnamed all-weather road parallels the Forest on the west side. From these highways and roads, numerous Forest trails and dirt roads provide access to the Forest.

Previous investigations

The most comprehensive report that discusses the geology and minerals of the Galiuro Forest Unit is a mineral survey of the former Galiuro Wilderness (about 53,000 acres) and contiguous roadless areas, conducted by the U.S. Bureau of Mines and U.S. Geological Survey in the 1970's (Creasey and others, 1981). This is the source for
Figure 1.--Index map of the Galiuro Mountains Unit, Coronado National Forest, Graham County, Arizona.
much of the information in this report. Creasey and others (1961) made a reconnaissance geologic map of parts of the San Pedro and Aravaipa Valleys that include the Galiuro Mountains. Simons (1964) gives a detailed description of the geology and ore deposits of the Klondyke 15 minute Quadrangle, which includes the northern part of the Forest and the Copper Creek mining district on the northwest side of the Forest. A number of older geologic and mineral investigations, both for specific sites and general areas, cover the Galiuro Mountains and nearby areas, and many of these are referenced in the reports by Creasey and others (1981) and Simons (1964).

Methods of investigation

A detailed literature search for pertinent geologic and mining information for the Forest was made prior to the field investigation. Bureau of Land Management and county records were examined for location of patented and unpatented mining claims.

The Bureau's field study concentrated on the examination of known mines, prospects, and mineralized areas inside the Forest boundary. A total of 10 field-days was spent in the field during the winter, spring, and fall of 1991. Mine and prospect workings that had little or no literature information were mapped and sampled. Veins, potentially mineralized structures, and altered and/or mineralized outcrops were sampled.

Twenty-three samples were taken; they consisted of two types: 1) chip -- a regular series of rock chips taken in a continuous line across a mineralized zone ore rock face; 2) grab -- rock collected randomly from a dump, stockpile, other rock at a mine working, or float. All samples were analyzed by Chemex Labs, Inc. of Vancouver, British Columbia for 32 elements by an inductively coupled plasma (ICP) method. Also, all samples were analyzed by Bondar-Clegg, Inc. of Vancouver, British
Columbia for gold plus 33 elements by a neutron activation method. Sample descriptions are summarized in appendix A, and all analytical results are in appendixes B and C.

Geologic setting

The Galiuro Mountains are a north- to northwest-trending mountain range in the Mexican Highland section of the Basin and Range Physiographic province. The range is an easterly-dipping tilted fault block bounded on the west by a west-dipping high-angle normal fault. A parallel west-dipping normal fault extends about three-quarters of the way through the Forest from the south boundary. The range is underlain mostly by gently eastward-dipping Miocene Galiuro volcanics, a thick sequence of andesitic to rhyolitic volcanic rocks. These volcanic rocks overlie Precambrian schists, granites, and quartzites, Paleozoic quartzites, and upper Cretaceous and lower Tertiary volcanics and granitic stocks. Of primary importance for mineral potential in the Forest is the possibility of a mineral-bearing granodioritic intrusion under younger volcanic rocks. Mineralized granodiorite is exposed in the Copper Creek mining district adjacent to the northwest part of the Forest, and likely extends eastward under the layer of younger Galiuro volcanics covering the Forest.
Mining History

Two mining districts lie in and adjacent to the Forest. The Rattlesnake district is near the central part of the Forest and the Copper Creek (Bunker Hill) district is adjacent to the northwest part of the Forest, centered around Copper Creek. No mines in the Copper Creek district are inside the Forest. The Rattlesnake district includes the Gold Mountain, Powers, and Long Tom Mines. The Sixteen-To-One Mine is a small, isolated mine at the southwest edge of the Forest, and in the southern part of the Forest are a number of small workings in the Jackson Mine area. In the northern part of the Forest are several small, scattered prospects. The Deer Creek Fire Agate Mine is in the northeast part of the Forest, and is the only known site where there is current mining activity.

Between 1908-1940, the Rattlesnake mining district produced 537 st of ore that yielded 163 oz gold, 2,310 oz silver, and 12,200 lb copper (Creasey and others, 1981, p. 34). At 1993 metal prices this production would be worth about $76,000. There are no records of production from the other small mines in the Forest, but any production from them could have been assigned to the Rattlesnake district.

Compared to the Rattlesnake district, the Copper Creek district had a substantial amount of production. Rich lead-silver ore was first discovered in this district in 1863, but there was little production until the 1900's. The majority of production from the Copper Creek district was between 1936 and 1938. Production figures vary among different sources of information, but between 1905-1959, the district produced approximately 11,060,000 lb copper, 4,170,000 lb molybdenum, 3,190,000 lb lead, 1,354 oz gold, and 240,000 oz silver. (See Creasey and others, 1981, p. 33; Kuhn, 1951, p. 57, Simons, 1964, p. 154.) At 1993 metal prices this
production would be worth approximately $21 million; about 89% of this value is from the copper and molybdenum.

MINERAL APPRAISAL

Northern Galiuro Mountains

Several small prospects are in an area of altered andesite in the northern part of the Forest (plate 1, fig. 2). Samples GA 1-7 taken from the prospects all had low metal concentrations (appendixes B, C), and no resources could be defined.

Outside the northwest boundary of the Forest is the Copper Creek mining district where a substantial amount of copper, lead, and molybdenum was produced, along with gold and silver. The minerals occur in both breccia pipes and vein deposits, in the Copper Creek Granodiorite and in the Glory Hole Volcanics. These mineral-bearing formations nearly border the northwest Forest boundary; inside the Forest they are blanketed with a thick sequence of younger-aged Galiuro Volcanics. The mineralized older rocks undoubtedly extend eastward beneath the younger rocks, in the north and northeastern part of the Forest. Creasey and others (1981, plate 2) show an area of about 30 mi² to be favorable for copper prospecting at depth inside the Forest. Any mineral resources in the older rocks in the Forest would need to be confirmed by drilling.

Rattlesnake mining district

The Rattlesnake mining district is near the geographic center of the Forest and includes workings in upper Rattlesnake Creek, and the Powers and Long Tom Mines in upper Kielberg Canyon.
Upper Rattlesnake Creek

In upper Rattlesnake Creek two adits are adjacent to each other; one is 45 ft long and the other has 370 ft of workings (fig. 3-5). These adits are referred to as the Gold Mountain workings by Creasey and others (1981, p. 75). The shorter adit follows two prominent shears in fine grained rhyolite porphyry (fig. 4). Three samples from the adit (GA 8-10) had low metal concentrations. The longer adit intersects several fault zones in rhyolite (fig. 5). Altered rhyolite and iron stains are abundant in the adit. Samples GA 11-21 from the adit all had low metal concentrations, and no mineral occurrences were identified at the two adits.

Powers Mine

The Powers Mine (fig. 6, plate 1) is in upper Kielberg Canyon and consists of two adits with about 625 ft of workings. The mine is one of two major producers in the Rattlesnake district. The adits intersected four major shears in rhyolite. No resources were identified at the Powers Mine during the Bureau's investigation of the Galiuro Wilderness (Creasey and others, 1981, p. 74). Nineteen samples from the workings showed the presence of spotty gold and silver mineralization associated with the shear zones.

Long Tom Mine

The Long Tom Mine (fig. 7, plate 1) is in upper Kielberg Canyon, about 1 1/4 mi south-southeast of the Powers Mine, and consists of 2 adits with 455 ft and 135 ft of workings, and a caved shaft reported to have been about 40 ft deep (Creasey and others, 1981, p. 73-77). The workings intersect several fault zones in rhyolite, up to 3 ft thick, consisting of fractured rhyolite, altered rhyolite, and gouge. Fifteen samples
taken during the Bureau’s previous investigation had generally low gold and silver concentrations, and no resources were identified.

About 1/2 mi northwest of the Long Tom Mine, at the mouth of an unnamed tributary to Kielberg Canyon, an adit was driven about 20 ft along a zone of limonite gouge. A chip sample taken across the 1-1/2-ft-thick gouge zone had a low precious metal concentration (Creasey and others, 1981, p. 75).

Sixteen-to-One Mine

The Sixteen-to-One Mine is just inside the Forest boundary on the west side, southwest of the Rattlesnake mining district (fig. 8, plate 1). The mine consists of 2 adjacent adits with about 160 ft of workings (fig. 9), and an adit complex with 2 levels and stoping, totaling about 275 ft of workings (fig. 10). The adits were driven in rhyolite and silicified rhyolite and intersected several major faults, the largest about 6 ft thick. Fifteen samples taken during the Bureau’s previous investigation (Creasey and others, 1981, p. 87-90), showed the presence of low gold and silver concentrations in the faults, along with minor amounts of copper oxides. No resources were identified in exposed rocks at the Sixteen-to-One Mine; the possibility of resources at depth is conjectural.

Southern Galiuro Mountains

In the southern Galiuro Mountains are a number of prospect pits and several small shafts and adits in altered and mineralized areas along or near a north- to northwest-trending fault between rhyolite and andesite. The prospects are between the Jackson Cabin area and the Jackson Mine area, along a distance of about 2 mi (fig. 11, plate 1). Forty-seven samples were taken from these prospects by Bureau personnel during a previous investigation (Creasey and others, 1981, p. 80-85) and
assays showed a highly erratic distribution of gold, silver, and copper mineralization, with generally low concentrations of these elements. There is no recorded production for this area, and no resources were identified during the Bureau's 1981 investigation.

CONCLUSIONS

Although no mineral resources could be identified in the Galiuro Mountains Unit study area during this investigation or in the earlier mineral resource studies by the Bureau and U.S. Geological Survey in the 1970's (Creasey and others, 1981), mineral deposits similar to those mined in the Copper Creek district may be present in the Forest. Large copper-molybdenum resources may occur in geologically related host rocks. The likelihood of mineral resources at depth is difficult to assess, however, because the principal rocks in the study area are younger than the known mineral-bearing rocks in the adjacent Copper Creek district and elsewhere in southeastern Arizona. Creasey and others (1981) show an area of about 30 mi² to be favorable for copper prospecting at depth inside the northern part of the Forest. Any mineral resources in underlying older rocks in the Forest would need to be confirmed by drilling.
REFERENCES


APPENDIX A

DATA FOR SAMPLES FROM THE GALIURO MOUNTAINS UNIT, CORONADO NATIONAL FOREST, GRAHAM COUNTY, ARIZONA
Appendix A.--Data for samples from the Galiuro Mountains, Coronado National Forest.

{xx, not applicable}

<table>
<thead>
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<th>Sample Number</th>
<th>Type</th>
<th>Length</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>GA 1</td>
<td>Grab</td>
<td>xx</td>
<td>Outcrop in bulldozer cut; large area of alteration and iron staining;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>rock highly fractured and brittle, area mapped as lower andesite unit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>of the Galiuro Volcanics; numerous vesicles partially filled with</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>limonite.</td>
</tr>
<tr>
<td>GA 2</td>
<td>Grab</td>
<td>xx</td>
<td>Outcrop along road; altered and fractured volcanic rock, bleached white,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>iron stained, prominent shearing, largest shear zone 1 ft thick;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>limonitic gouge.</td>
</tr>
<tr>
<td>GA 3</td>
<td>Grab</td>
<td>xx</td>
<td>Shallow trench; bright orange-tan, intensely altered volcanic rock;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>small phenocrysts of feldspar in aphanitic matrix.</td>
</tr>
<tr>
<td>GA 4</td>
<td>Grab</td>
<td>xx</td>
<td>Do.</td>
</tr>
<tr>
<td>GA 5</td>
<td>Grab</td>
<td>xx</td>
<td>Outcrop; highly altered and weathered aphanitic volcanic rock, bleached</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>whitish-gray; iron staining on surface.</td>
</tr>
<tr>
<td>GA 6</td>
<td>Grab</td>
<td>xx</td>
<td>Outcrop along roadcut; bright orange-tan, intensely altered volcanic</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>rock; area mapped as lower andesite unit of Galiuro volcanics.</td>
</tr>
<tr>
<td>GA 7</td>
<td>Grab</td>
<td>xx</td>
<td>Outcrop; intensely altered and iron stained volcanic rock; secondary</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>chalcedony.</td>
</tr>
<tr>
<td>GA 8</td>
<td>Chip</td>
<td>6 ft</td>
<td>Adit, 45 ft long; fine-grained volcanic porphyry; moderate iron staining</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>; prominent shear. (See figure 4.)</td>
</tr>
<tr>
<td>GA 9</td>
<td>Chip</td>
<td>4.5 ft</td>
<td>Do.</td>
</tr>
<tr>
<td>GA 10</td>
<td>Chip</td>
<td>4.5 ft</td>
<td>Same adit as sample GA 8; some altered and bleached rock; minor gouge.</td>
</tr>
<tr>
<td>GA 11</td>
<td>Chip</td>
<td>5.5 ft</td>
<td>Adit, 370 ft of workings; porphyritic volcanic rock; prominent fault</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>fracture; prominent iron stains. (see figure 5)</td>
</tr>
<tr>
<td>GA 12</td>
<td>Chip</td>
<td>4 ft</td>
<td>Do.</td>
</tr>
<tr>
<td>GA 13</td>
<td>Chip</td>
<td>3 ft</td>
<td>Same adit as sample GA 11; prominent fault fracture; iron and manganese</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>stains.</td>
</tr>
<tr>
<td>Sample Number</td>
<td>Type</td>
<td>Length</td>
<td>Remarks</td>
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<tr>
<td>---------------</td>
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</tr>
<tr>
<td>GA 14</td>
<td>Chip</td>
<td>3 ft</td>
<td>Same adit as sample GA 11; volcanic rock, iron stained.</td>
</tr>
<tr>
<td>GA 15</td>
<td>Chip</td>
<td>4 ft</td>
<td>Same adit as sample GA 11; iron stained volcanic rock; thin fractures with limonite gouge.</td>
</tr>
<tr>
<td>GA 16</td>
<td>Chip</td>
<td>3 ft</td>
<td>Same adit as sample GA 11; prominent fracture zone; altered, brecciated volcanic rock; gouge, iron stains.</td>
</tr>
<tr>
<td>GA 17</td>
<td>Chip</td>
<td>3 ft</td>
<td>Same adit as sample GA 11; altered, fractured volcanic rock; iron stains.</td>
</tr>
<tr>
<td>GA 18</td>
<td>Chip</td>
<td>3 ft</td>
<td>Same adit as sample GA 11; prominent fault zone; fractured, altered volcanic rock; iron stains.</td>
</tr>
<tr>
<td>GA 19</td>
<td>Chip</td>
<td>3 ft</td>
<td>Same adit as sample GA 11; fractured, iron stained volcanic rock.</td>
</tr>
<tr>
<td>GA 20</td>
<td>Chip</td>
<td>3.5 ft</td>
<td>Same adit as sample GA 11; prominent fracture zone; altered volcanic rock; abundant iron stains.</td>
</tr>
<tr>
<td>GA 21</td>
<td>Chip</td>
<td>3 ft</td>
<td>Same adit as sample GA 11; prominent fault fracture; brecciated volcanic rock; gouge, limonite.</td>
</tr>
<tr>
<td>GA 22</td>
<td>Chip</td>
<td>4 ft</td>
<td>Prospect pit, 5 ft deep; iron stained volcanic rock.</td>
</tr>
<tr>
<td>GA 23</td>
<td>Chip</td>
<td>3 ft</td>
<td>Outcrop; iron stained volcanic rock.</td>
</tr>
</tbody>
</table>
APPENDIX B

INDUCTIVELY COUPLED PLASMA-ATOMIC EMISSION SPECTROSCOPY
MULTI-ELEMENT ANALYTICAL DATA FOR SAMPLES ANALYZED BY
CHEMEX LABS, INC.
Appendix B.--Inductively coupled plasma-atomic emission spectroscopy multi-element analytical data for samples analyzed by Chemex Labs, Inc.

[<, less than lower detection limit (some elements have elevated lower detection limits due to interference from other elements)]

| Sample | Ag (ppm) | Al (ppm) | As (ppm) | Ba (ppm) | Be (ppm) | Br (ppm) | Ca (ppm) | Cd (ppm) | Co (ppm) | Cr (ppm) | Cu (ppm) | Fe (ppm) | Ga (ppm) | Ge (ppm) | Hg (ppm) | Hf (ppm) | Ir (ppm) | La (ppm) | Li (ppm) | Mn (ppm) | Mo (ppm) | Nb (ppm) | Ni (ppm) | Pb (ppm) | Po (ppm) | Ra (ppm) | Rb (ppm) | Re (ppm) | Ru (ppm) | Sb (ppm) | Sc (ppm) | Se (ppm) | Si (ppm) | Sn (ppm) | Sr (ppm) | Ta (ppm) | Te (ppm) | Th (ppm) | Ti (ppm) | U (ppm) | V (ppm) | W (ppm) | Zn (ppm) |
|--------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
APPENDIX C

NEUTRON ACTIVATION MULTI-ELEMENT ANALYTICAL DATA FOR SAMPLES ANALYZED BY BONDAR-CLEGG & COMPANY LTD.
Appendix C.--Neutron activation multi-element analytical data for samples analyzed by Bondar-Clegg & Company Ltd.

[<, less than lower detection limit (some elements have elevated lower detection limits due to interference from other elements)]

| Sample No. | Ag (ppm) | Al (ppm) | As (ppm) | Ba (ppm) | Be (ppm) | Bi (ppm) | Ca (ppm) | Cd (ppm) | Co (ppm) | Cr (ppm) | Cu (ppm) | Fe (ppm) | Hg (ppm) | I (ppm) | In (ppm) | K (ppm) | Li (ppm) | Mg (ppm) | Mn (ppm) | Mo (ppm) | Na (ppm) | Nb (ppm) | Ni (ppm) | Pb (ppm) | Sb (ppm) | Sc (ppm) | Se (ppm) | Sn (ppm) | S (ppm) | Ta (ppm) | Tb (ppm) | Tc (ppm) | Ti (ppm) | V (ppm) | Zn (ppm) | Zr (ppm) |
|------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
APPENDIX D

DATA FOR INDIVIDUAL MINES AND PROSPECTS IN THE GALIURO MOUNTAINS UNIT, CORONADO NATIONAL FOREST, GRAHAM COUNTY, ARIZONA
Mine Name or Mineralized Area

Unnamed bulldozer cut

Location

Near head of Fourmile Creek.
NE. 1/4 sec. 2, T. 8 S., R. 19 E.

Production

None.

Development

Shallow bulldozer cut, may have been a drilling site.

Current Status

Inactive.

Miscellaneous

Sample GA 1.

Geologic Description and Ore Mineralogy

Large area of alteration and iron staining, highly fractured and brittle andesite, numerous vesicles partially filled with limonite; area mapped as lower andesite unit of the Galiuro Volcanics.

References

Simons, 1964, plate I.
Mine Name or Mineralized Area

Unnamed trench

Location

Head of Left Branch of Long Hollow
NW. 1/4, sec. 12, T. 8 S., R. 19 E.

Production

None

Development

Shallow trench about 40 x 15 ft.

Current Status

Inactive.

Miscellaneous

Sample GA 3.
Dump about 200 st.

Geologic Description and Ore Mineralogy

Highly altered and weathered aphanitic rock, mapped as andesite, bleached
whiteish-gray, iron stains on surface, small phenocrysts of feldspar.

References

Mine Name or Mineralized Area

Unnamed trench

Location

Head of Squaw Creek.
NW. 1/4 sec 12, T. 8 S., R. 19 E.

Production

None.

Development

Shallow trench (may be erosion scar).

Current Status

Inactive.

Miscellaneous

Sample GA 4.

Geologic Description and Ore Mineralogy

Intensely altered volcanic rock, bright orange-tan, small phenocrysts of feldspar in aphanitic matrix.

References

Mine Name or Mineralized Area

Unnamed adit (Gold Mountain workings)

Location

Upper Rattlesnake Creek
SW. 1/4 sec 31, T. 9 S., R. 20 E.

Production

None.

Development

45-ft-long-adit.

Current Status

Inactive, inside designated wilderness.

Miscellaneous

Samples GA 8-10, fig. 4.
Dump about 1,000 st.

Geologic Description and Ore Mineralogy

Prominent shears in fine-grained rhyolite porphyry, iron staining, some alteration, minor gouge.

References

Mine Name or Mineralized Area

Unnamed adit (Gold Mountains workings)

Location

Upper Rattlesnake Creek.
SW. 1/4 sec. 31, T. 9 S., R. 20 E.

Production

Likely none.

Development

Adit, 370 ft of workings.

Current Status

Inactive, inside designated wilderness.

Miscellaneous

Samples GA 11-21, fig. 5.

Geologic Description and Ore Mineralogy

Rhyolite porphyry, commonly fractured, several faults in adit, limonite and gouge in some; common iron stains, manganese stains, altered rhyolite.

References

Mine Name or Mineralized Area

Powers Mine

Location

Upper Kielberg Canyon.
SE. 1/4 sec. 6, T. 10 S., R. 20 E.

Production

Production for Rattlesnake district between 1908-1940:
- Ore 537 st
- Gold 163 oz
- Silver 2,310 oz
- Copper 12,200 lb
(The Powers and Long Tom Mines were the 2 major producers in the Rattlesnake district)

Development

Adit with about 480 ft of workings including 2 winzes and 1 raise, an adjacent adit with about 25 ft of workings.

Current Status

Inactive, inside designated wilderness.

Miscellaneous

Figure 6, plate 1.

Geologic Description and Ore Mineralogy

Four major shears in rhyolite, limonite, gouge, altered rhyolite. Spotty gold and silver mineralization.

References

Mine Name or Mineralized Area

Long Tom Mine

Location

Upper Kielberg Canyon.
SE. 1/4 sec. 7, T. 10 S., R. 20 E.

Production

(See production figures previous page.)

Development

Two adits, 455 and 135 ft of workings, a caved shaft reported to have been about 40 ft deep.

Current Status

Inactive, inside designated wilderness.

Miscellaneous

Figure 7, plate 1.

Geologic Description and Ore Mineralogy

Several fault zones in rhyolite, up to 3 ft thick; faults contain fractured, altered rhyolite, gouge; low gold and silver concentrations in the zones.

References

Creasey and others, 1981, p. 73-77.
Mine Name or Mineralized Area

Unnamed adit.

Location

At mouth of unnamed tributary of upper Kielberg Canyon, about 1/2 mi northwest of Long Tom Mine.
NW. 1/4 sec. 7, T. 10 S., R. 20 E.

Production

None.

Development

Adit, about 20 ft long.

Current Status

Inactive, inside designated wilderness.

Geologic Description and Ore Mineralogy

Zone of limonite gouge, 1 1/2 ft thick, strike N. 59° W., dip 58° SW., in rhyolite.

References

Creasey and others, 1981, p. 75.
Mine Name or Mineralized Area

Sixteen-to-One Mine

Location

Unnamed south tributary of Kielberg Canyon.
SE. 1/4 sec. 10, T. 10 S., R. 19 E.

Production

Possible small gold and silver; none recorded.

Development

One adit complex with 2 levels and stoping, about 275 ft of workings.
Two adjacent adits with about 160 ft of workings.

Current Status

Inactive, inside designated wilderness.

Miscellaneous

Figures 8-10.

Geologic Description and Ore Mineralogy

Fault zones up to 6 ft thick in rhyolite and silicified rhyolite, limonite stains, low
gold and silver assays, minor copper oxides.

References

Creasey and others, 1981, p. 87-90.
Mine Name or Mineralized Area

Jackson Mine and vicinity, Southern Galiuro Mountains

Location

Southern Galiuro Mountains, Redfield Canyon, Jackson Canyon, Mitchell Canyon and vicinity.
Sec. 4, 9, 16, 22, T. 11 S., R. 20 E.

Production

Possible small gold, silver, and/or copper; no recorded production.

Development

Numerous pits, several shafts ranging from shallow to 300-400 ft deep, several short adits.

Current Status

Inactive, mostly inside designated wilderness.

Miscellaneous

See fig. 11.

Geologic Description and Ore Mineralogy

Altered and mineralized areas associated with a north- to northwest-trending fault zone between rhyolite and andesite, highly erratic distribution of gold, silver, and copper minerals within and adjacent to fault, overall low assay concentrations.

References

Mine Name or Mineralized Area

Deer Creek fire agate mine

Location

Near Deer Creek.
NE. 1/4 sec. 11, T. 9 S., R. 20 E.

Production

Fire agate and chalcedony, amount of production difficult to assess.

Development

Open cut, several hundred feet long.

Current Status

Small-scale mining operation.

Miscellaneous

Plate 1.

Geologic Description and Ore Mineralogy

Fire agate with chalcedony in pockets and cavities in volcanic rock.

References

APPENDIX E

MINE LOCATION AND MINE MAP FIGURES FOR
THE GALIUKO MOUNTAINS UNIT, CORONADO
NATIONAL FOREST, GRAHAM COUNTY, ARIZONA
Figure 2.—Prospects at the north end of the Galiuro Mountains showing sample localities GA 2-7.
Figure 3.— Mines and prospects near Rattlesnake Creek showing sample localities GA 8-23.
Figure 4.—Adit adjacent to Rattlesnake Creek showing sample localities GA 8-10.
Figure 5.—Adit adjacent to Rattlesnake Creek showing sample localities GA 11-21.
Figure 6.—Powers Mine (map from Creasy and others, 1981).
Country rock rhyolite

Figure 7.—Long Tom Mine (from Creasy and others, 1981).
Figure 8.—Sixteen-to-One mine.
Figure 9.—Sixteen-to-One Mine, northern adits (from Creasy and others, 1981).
Figure 10.--Sixteen-to-One Mine southern adit (from Creasy and others, 1981).
Figure 11.—Mines and prospects in the southern part of the Galiuro Mountains (locations from Creasy and others, 1981).
SAMPLE LOCALITY MAP OF THE GALIFURO MOUNTAINS UNIT,
CORONADO NATIONAL FOREST, GRAHAM COUNTY, ARIZONA

BY

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