UNITED STATES DEPARTMENT OF THE INTERIOR
(BUREAU OF MINES)

SUMMARY REPORT

MINES AND PROSPECTS IN THE LOON CREEK MINING DISTRICT, CUSTER COUNTY, IDAHO

By
James Ridenour, Spencee L. Willett, Michael S. Miller,
Nathan T. Lowe, Andrew M. Leszcykowski, and David A. Benjamin

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This open file report partially summarizes Bureau of Mines data which will be incorporated in a joint report with the U.S. Geological Survey. The report is preliminary and has not been edited or reviewed for conformity with the U.S. Bureau of Mines standards and nomenclature. Work on this study was conducted by personnel from Western Field Operations Center, East 360 Third Avenue, Spokane, Washington 99202

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SUMMARY

This report represents the first comprehensive accounting of lode mining sites in the Loon Creek mining district, Custer County, Idaho. Thirty-five mine and prospect locations have been added to the Bureau's Mineral Industry Location Subsystem (MILS) data base as a result of initial phases of a mineral appraisal of the River of No Return Wilderness; previously known locations were field checked and the updated information added to the data base.

The district's major deposits are gold-copper-silver fissure-fillings hosted by biotite schist intruded by dikes ranging in composition from rhyolite to lamprophyre. These deposits contain a trace element suite similar to Tertiary pink granites and may be related to intrusion of the nearby Casto pluton.

Continued firm gold prices could stimulate the search for precious metal occurrences in this and other mining districts in central Idaho.

INTRODUCTION

Under provisions of the Wilderness Act of 1964 (Public Law 88-577) and the Central Idaho Wilderness Act of 1980 (Public Law 96-312), personnel from the Western Field Operations Center, U.S. Bureau of Mines, began a survey of mines and prospects in the River of No Return Wilderness during the summer of 1982. A major effort was directed toward locating, identifying, sampling, and describing mines and prospects within and near the Wilderness, exclusive of properties described during previous Bureau investigations of mineral potential of the Idaho Primitive Area and its additions which are now part of the River of No Return Wilderness. This preliminary report describes the setting, history, and mines and prospects within and near the Loon Creek mining district, Custer County, Idaho. A formal assessment of the mineral potential of the River of No Return Wilderness will be published jointly by the U.S. Bureau of Mines and U.S. Geological Survey following completion of field investigations.

The purpose of this preliminary report is twofold. First, our investigations to date have revealed far more prospects than previously reported and thus represent the only systematic and complete accounting of these locations. Second, the Bureau of Mines is releasing the data in preliminary form in order to make it available prior to the December, 1983 deadline for mineral entry stipulated by the Wilderness Act (Public Law 88-577). The following report encompasses only lode mines and prospects of the Loon Creek mining district. Because the boundary of the mining district is an informal one, properties outside, but within a mile, of the boundary are included in this report.

SETTING

The Loon Creek mining district is in the northwest part of Custer County (fig. 1) and includes the middle reaches of Loon Creek and its tributaries, principally Canyon Creek and Mayfield Creek. The district is accessible by road up the Yankee Fork Salmon River from Sunbeam to Bonanza, and then up Jordan Creek to Loon Creek summit, and down Mayfield Creek (fig. 2). The road ends at Transfer Creek campground, approximately 34 mi from Sunbeam. Idaho State Highway 75 links Challis to the east with Stanley and Ketchum to the west and south, respectively. The nearest railheads are Ketchum and Mackay.

Elevations within the district range from 5,400 ft on Loon Creek to 9,942-ft Pinyon Peak, the dominant physiographic feature in the district. Topography ranges from rugged to very rugged, principally along stream canyons. Vegetation includes stands of pine, fir, and aspen; brush dominates areas of former forest fires. Heavy snowfall is common, often blocking the road into the district in November; this road is usually reopened in May. The central, lower part of the district can remain relatively free of snow during the winter months.

PREVIOUS STUDIES

Geology and mineral resources of the Loon Creek mining district have been discussed by Bell (1903, 1905), Umpleby (1913a and b), and Ross (1934, 1941). Specific accounts of the Lost Packer Mine have been written by Weed (1906), Bell (1906, 1907, and 1908), Moore (1909), Bell (1911, 1912, and 1913), and Varley and others (1919). Geochemical studies encompassing parts of the district have been published by Knowles and Bennett (1978) and Knowles (1979). A library and data base compilation of mines and prospects of the Challis 1° x 2° sheet was prepared by Mitchell and others (1981). Compilation geology of the Challis sheet was prepared by Rember and Bennett (1979).

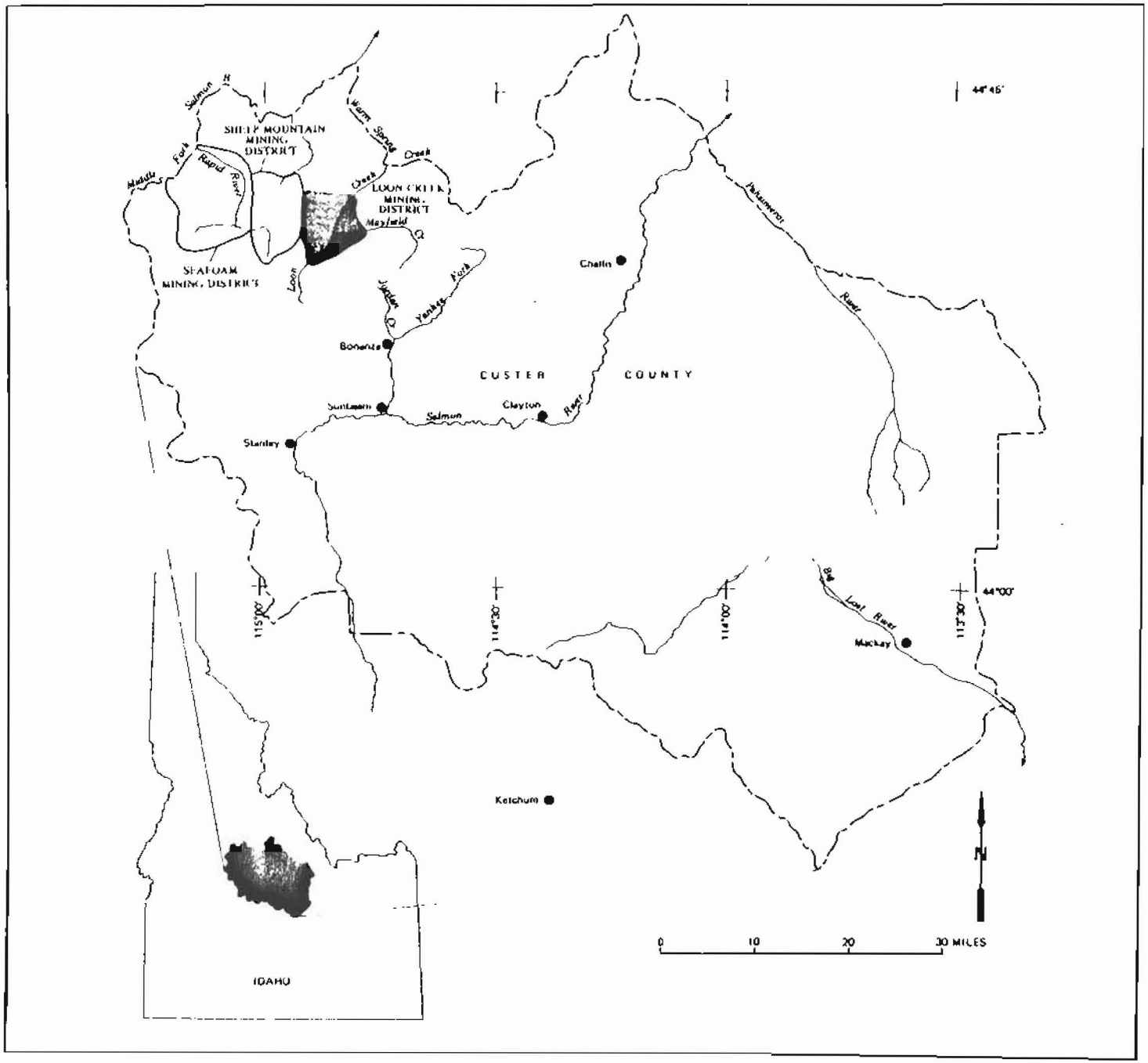

Figure 1. - Index map of the Loon Creek mining district

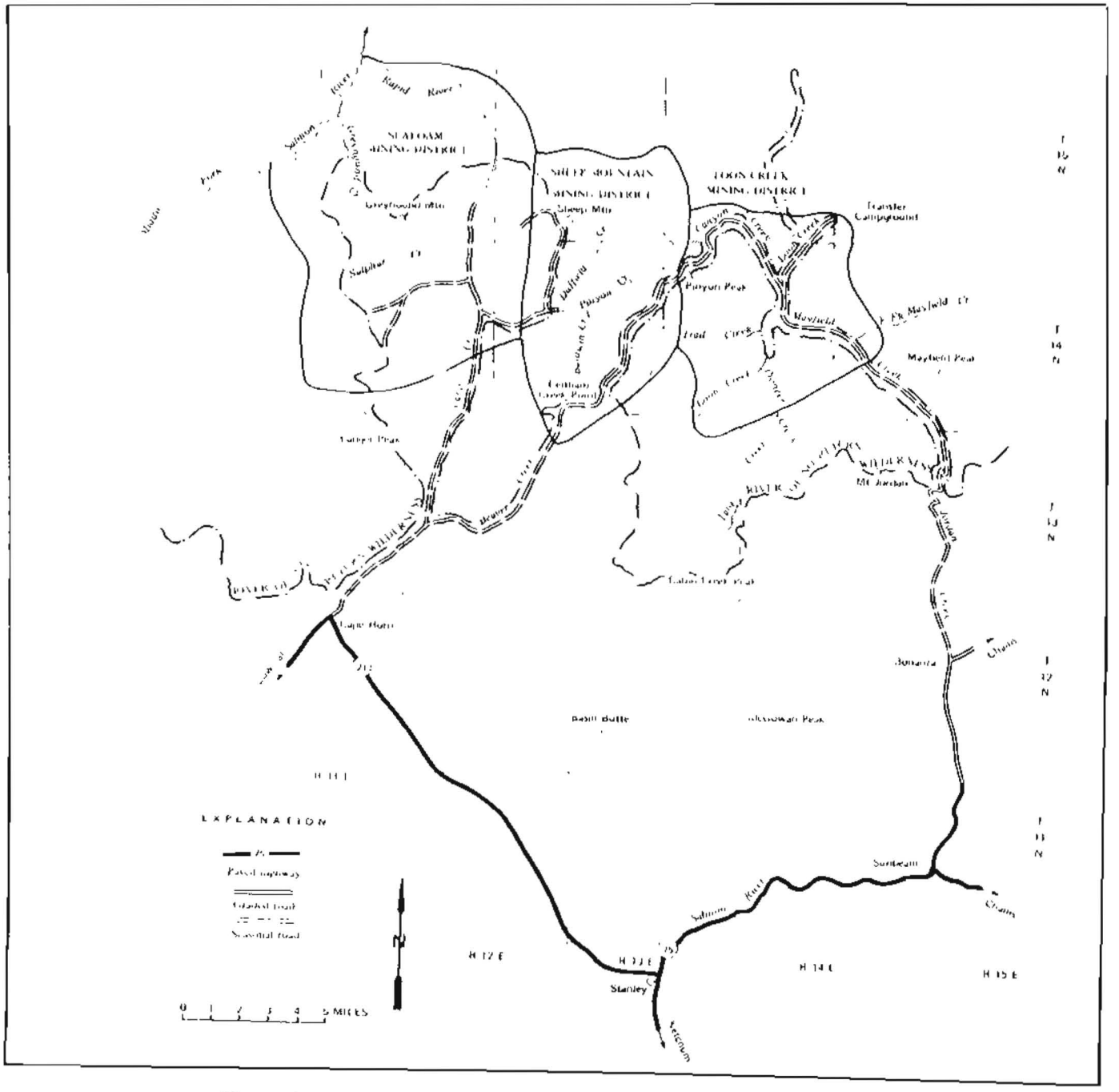

Figure 2. - Access routes to the Loon Creek mining district

PRESENT INVESTIGATIONS

Preliminary work included a search of literature pertaining to geology and mineral resources within and near the mining district; historic mining claim locations were checked through Custer County records and recent claim locations were obtained through U.S. Bureau of Land Management records. Known mining locations were compiled from the U.S. Bureau of Mines Mineral Industry Location Subsystem (MILS), a computerized data file of mines and prospects cited in the literature or obtained from other sources. A major part of this study was directed toward: 1) updating existing locations, and 2) adding previously unknown locations to the data file. Each MILS location is assigned a unique number of ten digits (sequence number) corresponding to a three-digit state code, a three-digit county code, and a four-digit deposit reference number, in addition to other data as outlined by Berg and Carrillo (1980). Rather than assign a MILS sequence number for each individual working, a number was given to each group of workings when, in the opinion of the investigator, it was probable that a prospector was attempting to trace an alteration zone or locate extensions of a structure or related structures. The assigned location, then, represents the main working, if more than one is present. In most cases, the new locations are not named as correct names are nearly impossible to determine from historic claim records; furthermore, frequently changed claim names prohibit easy maintenance of the data base.

All mines and prospects located were examined and sampled, and, if warranted, mapped. Chip samples were taken from mineralized structures when possible, and grab samples were taken from dumps where workings were inaccessible. Samples were pulverized and fire-assayed for gold and silver; contract detection limits for these elements are 0.005 and 0.2 oz per ton, respectively. Quantitative values of visible or suspected elements were determined by atomic absorption, colorimetric, or X-ray fluorescence methods.

The boundary of the Loon Creek mining district used in this report was transferred from Mitchell and others (1981) to larger scale topographic maps for compilation and reduced for this publication.

GEOLOGIC SUMMARY

Principal geologic control in the district has been provided by Ross (1934) and by Sibbett (1976) and Yinger (1976). This data, compiled by Rember and Bennett (1979), is modified in figure 3. These publications indicate that the southern part of the district is composed mainly of quartz monzonite of the Idaho batholith. These rocks are overlain, near the center of the district, by Precambrian metasedimentary and Paleozoic sedimentary and metasedimentary rocks. Tertiary volcanic rocks crop out in the east and north parts of the district where they overlie older rock units, and are intruded by Tertiary rocks such as the Casto pluton (Cater and others, 1973). Scattered remnants of glacial debris are present; alluvium occurs along major drainages, mainly Loon, Mayfield, Trail, and Canyon Creeks.

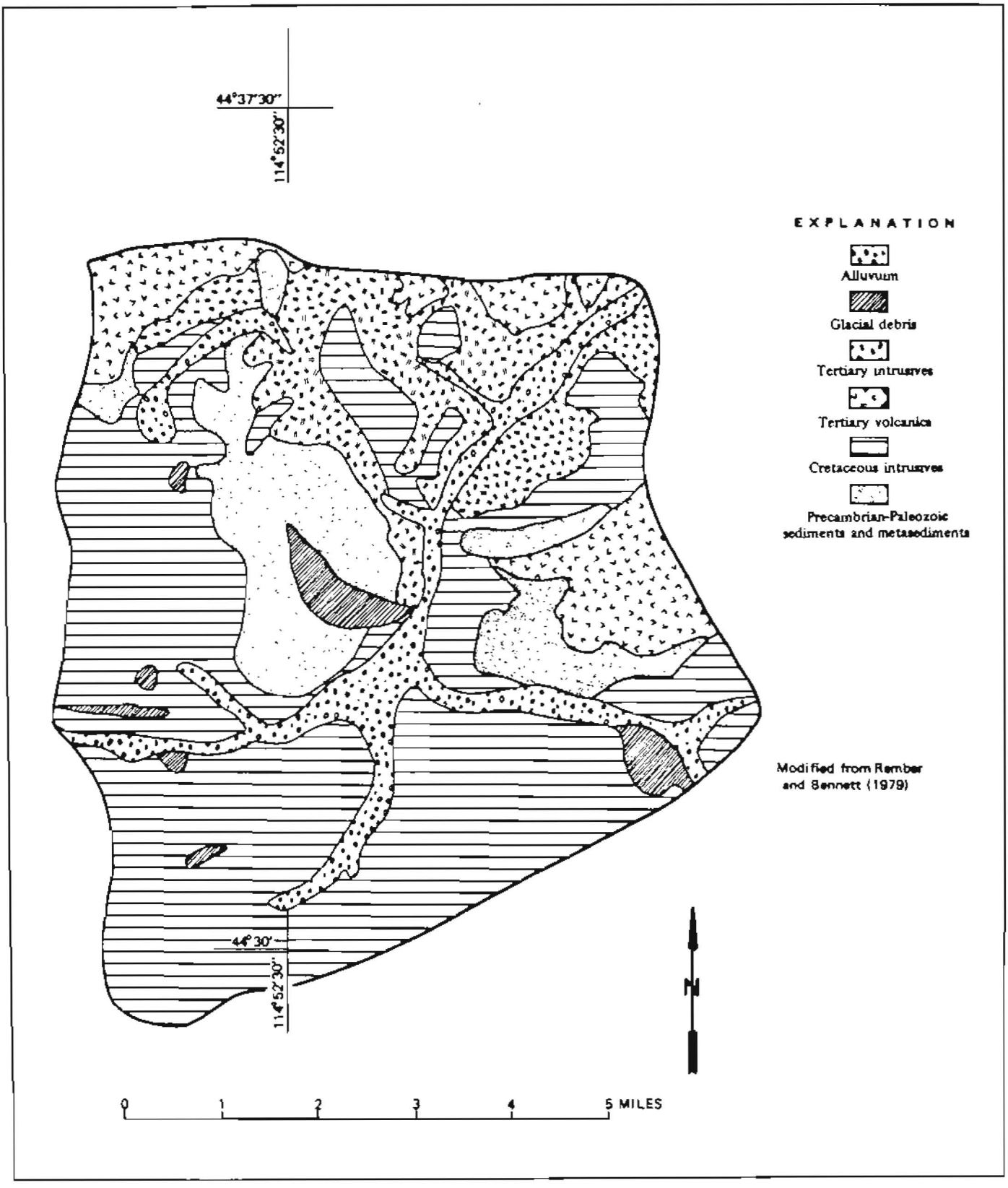

Figure 3. - Generalized geology of the Loon Creek mining district

Ross (1934, Plate 1) mapped one major fault in the district which varies in its trend from north-northwest to northeast. Yinger (1976, p. 89) shows known and inferred faults striking east-northeast and northwest; he also noted that Tertiary dikes follow the dominant north to northeast trend of the faults (p. 100). Sibbett (1976, p. 107-108) concluded that the central part of the district was a graben which localizes the course of Loon Creek.

MINERAL DEPOSITS

According to Ross (1934, p. 117), the earliest recorded activity in the district was placer mining along Loon Creek, mainly below the mouth of Canyon Creek. The mining of placer deposits essentially ceased after 1879, and in 1902, the Lost Packer Mine was located (Umpleby, 1913a, p. 66; 1913b, p. 91). Custer County records indicate approximately 650 lode claims were located within the district between 1886 and 1981; at least 50 percent of these were located during the decade 1901 through 1910, many by Clarence Eddy, who located the first claims on the Lost Packer Mine. U.S. Bureau of Mines production records show approximately 9,900 tons of ore were extracted from six mines between 1903 and 1941. The ore had a historic value of approximately $720,000; 58 percent of the value was from gold, 37 percent from copper, 4 percent from silver, and less than 1 percent from lead. Ninety-eight percent of the value came from the Lost Packer Mine. Mining in the district centered about the Lost Packer Mine and following its closure in 1917 most activity ceased; less than 2 percent of the district's production occurred since that year. The rise in gold prices since the early 1970's nas resulted in renewed interest in the district, but there has been systematic exploration only at the Lost Packer Mine.

The origin of these deposits seems to be related to mid-Tertiary plutonism for some of the characteristics of deposits of this metallogenic epoch, as noted by Anderson (1951, p. 605-606), are strikingly similar to those at the Lost Packer Mine, here considered the "type" deposit for the district. Furthermore, trace elements present in this system include arsenic, bismuth, fluorine, molybdenum, tungsten, lead, and zinc, indicating a probable genetic link to intrusion of the nearby Casto pluton, a Tertiary pink granite of the type known to carry some of these elements (Bennett, 1980); the age of this pluton has been reported as about 43 m.y. (Cater and others, 1973, p. 26).

Mines and prospects within and near the Loon Creek mining district are shown on figure 4 and summarized in the Appendix.

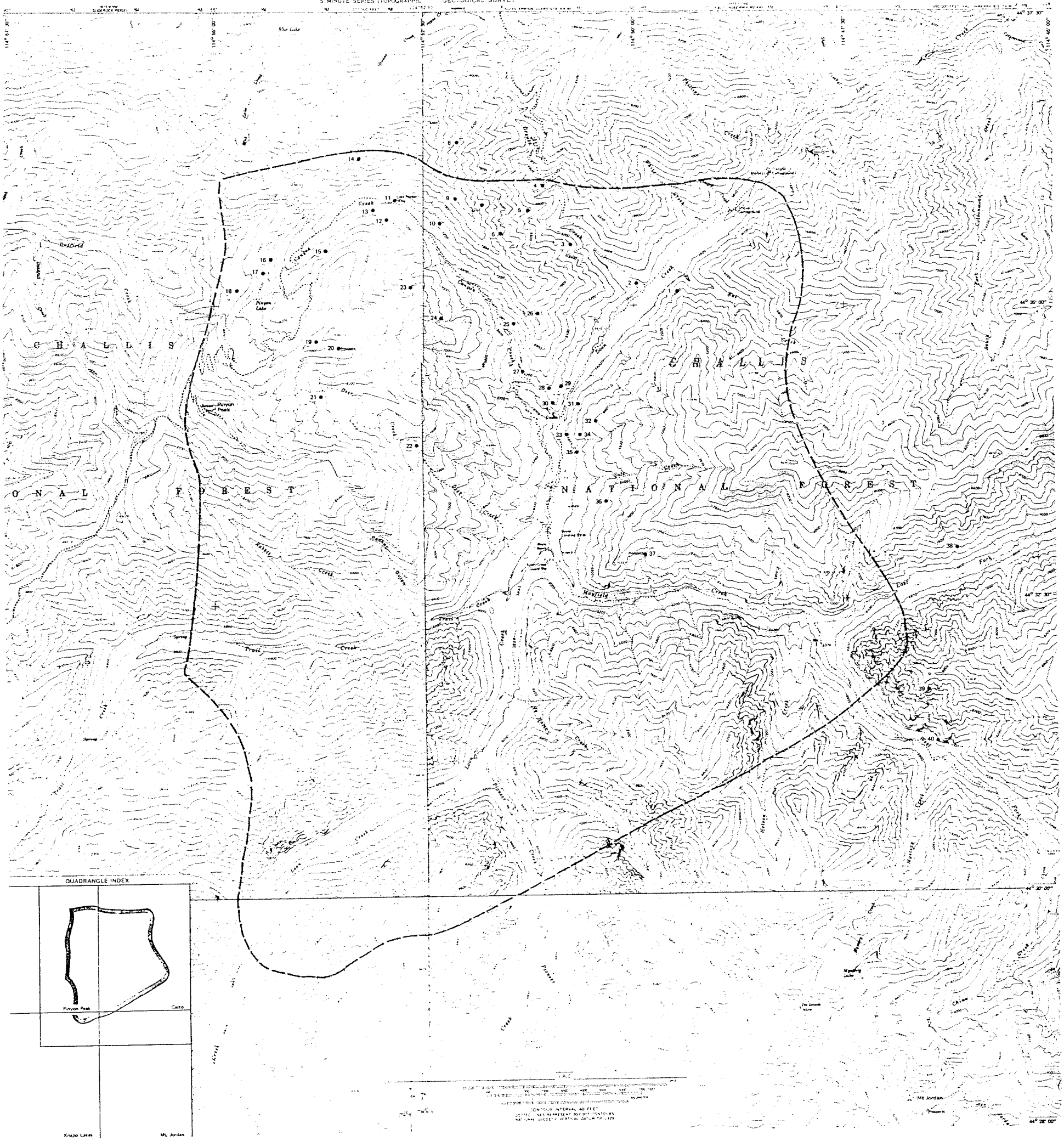

Figure 4. - Mines and prospects in the Loon Creek mining district

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Appendix.--Summary of mines and prospects

Map No.	Property name	MRDS sequence number	Workings	Summary
1	Unnamed prospect	0160370807	Two shallow surface pits.	Iron-stained quartz from probable fracture-fillings near the contact between quartz monzonite and younger granite porphyry. Two samples: one grab sample contained 0.008 oz/ton gold, no silver detected; no gold or silver detected in a chip sample.
2	Unnamed prospect	0160370799	One partially caved adit, estimated at <20 ft long.	Iron-stained shear zone in altered metasedimentary rock. One chip sample: no gold or silver detected.
3	Unnamed prospect	0160370798	One caved adit, estimated ≤ 15 ft long.	Iron-stained shear zone in altered metasedimentary rock. One chip sample: no gold or silver detected.
4	Unnamed prospect	0160370832	One caved adit, estimated at <50 ft long.	No samples taken. Adit driven in apparently barren quartz monzonite. No quartz vein material or altered rock observed on dump.
5	Unnamed prospect	0160370791	Two shallow pits.	Iron-stained quartz vein and stringers in granitic gneiss. One grab sample: 0.176 oz/ton gold and 0.7 oz/ton silver.
6	Unnamed prospect	0160370795	One caved adit, estimated <50 ft long.	Iron- and manganese-stained quartz vein in granitic gneiss intruded by andesite dike. One grab sample: no gold or detected.
7	Unnamed prospect	0160370788	Two adits totaling <50 ft long, one caved adit estimated >100 ft in long, three shallow pits.	Coarse-grained quartz monzonite (?) intruded by a diorite dike; quartz veins exposed by one of the adits and in two of the pits. Three samples: one grab sample contained 0.3 oz/ton silver; no gold or silver detected in the other samples.
8	Unnamed prospect	0160370787	Four shallow pits.	Quartz veins in gneiss and biotite schist. One grab and one chip sample: 0.2 oz/ton silver; no gold detected.
9	Unnamed prospect	0160370793	Two caved adits, one estimated ≤ 100 feet long, one ≤ 500 ft long, nine shallow pits.	Quartz vein material, moderately iron-stained, with a trace of fine grained pyrite boxwork; granitic gneiss intruded by dacite and andesite dikes. Six grab samples; no gold or silver detected.
10	Unnamed prospect	0160370794	Three caved adits, totaling an estimated 200 ft in length, two shallow pits.	Quartz vein in granitic gneiss. One chip sample, one grab sample: no gold or silver detected.
11	Lost Packer Mine	0160370235	Ten numbered adits, totaling more than 12,800 ft in length, and several shorter adits, mostly on unpatented claims surrounding the patented group; numerous shallow surface workings.	Numbered adits, excavated along a fissure-vein in biotite schist cut by intermediate to silicic intrusive dikes. The ore was dominantly chalcopyrite in a gangue of quartz and siderite. Pyrite and arsenopyrite rare. Some molybdenite in the vicinity of aplite dikelets. Production records indicate approximately 20,000 oz of gold, 48,000 oz of silver, and 1,800,000 lbs of copper were produced intermittently from 1903 to 1916. Recent drilling from the number 7 level revealed a faulted segment of the ore zone. Seven selected samples of core contained from 0.32 to 3.05 oz/ton gold, 0.5 to 13.3 oz/ton silver, and 2.77 to 28.5 percent copper.

Appendix.--Summary of mines and prospects--Continued

Map No.	Property name	MILS Sequence number	Workings	Summary
12	Unnamed prospect	0160370784	One caved adit, estimated at ≤ 100 ft long.	Possible quartz fissure-filling in biotite schist; as much as 10 percent pyrite present in some quartz fragments. One grab sample: no gold detected, 0.2 oz/ton silver. This prospect is on an old road constructed between the Last Packer Mine and "quarries" which supplied iron-bearing flux material to the smelter at Ivers townsite (Ross, 1934, p. 124).
13	Unnamed prospect	0160370783	Caved adit, estimated at 400 ft long.	Possible fissure-vein in biotite schist, one grab sample: no gold or silver detected.
14	Effa Claim	0160370234	Two adits, totaling more than 200 ft in length, and several small pits near the head of "Effa Gulch".	Lower adit driven along contact between granophyre dike and silicified schist; shear zone contains quartz pods and lenses with as much as 15 percent sulfide minerals, dominantly pyrite with some chalcopyrite and arsenopyrite. Three chip samples: gold ranged from <0.005 to 0.226 oz/ton, silver ranged from <0.02 to 4.8 oz/ton, and copper ranged from 0.01 to 0.04 percent. Upper adit driven in dacite porphyry apparently to intercept sulfide-bearing zones exposed above by shallow pits. Four samples: three contained <0.005 oz/ton gold, two contained <0.02 oz/ton silver, two grab samples and one chip sample contained from 0.05 to 0.46 percent copper, one grab sample contained 0.188 oz/ton gold and 1.8 oz/ton silver; these samples represent altered granophyre, quartzite, lamprophyre, and quartz vein material with sulfide boxwork.
15	Unnamed prospect	0160370785	One caved adit, estimated <50 ft long, one 5-ft adit, three shallow pits.	Possible fissure-vein in silicified schist. Two grab samples: 0.2 oz/ton silver; no gold detected.
16	Unnamed prospect	0160370779	Three adits, totaling approximately 400 ft in length; one caved adit, estimated <25 ft in length; one water-filled shaft, estimated <20 ft deep; one small pit.	Workings excavated along fractures in diorite cut by aplite dikes and dikelets. Seven chip samples, and two grab samples: gold ranged from <0.005 to 0.21 oz/ton, silver ranged from <0.02 to 1.5 oz/ton, copper (in seven samples) ranged from <0.01 to 10.3 percent, and one sample contained 0.29 percent lead and 0.27 percent zinc.
17	Unnamed prospect	0160370782	One 12-ft adit.	About 2 percent pyrite and a trace chalcopyrite was present in samples along contact between aplite dike and diorite. One chip sample contained 0.01 percent copper, no gold or silver detected.
18	Unnamed prospect	0160370786	Two shallow pits.	Quartz-hematite fracture-filling in siliceous limestone. Two chip samples, one grab sample: silver ranged from <0.2 to 0.5 oz/ton, no gold detected.

Appendix.--Summary of mines and prospects--Continued

Map No.	Property name	MILS sequence number	Workings	Summary
19	Lost Eagle Claim	0160370251	One vertical shaft, at least 50 ft deep; seven pits, approximately 500 ft of bulldozer trenches.	Six-ft to 13-ft-wide siliceously altered, brecciated, shear zone, strike N. 26° - 40° W., dip 55° - 87° SW., in schist. Visible sulfides in veinlets in quartz-siderite. Seven samples: no gold detected; two contained 0.2 and 5.6 oz/ton silver.
20	Sunrise Mine	0160370501	Three collapsed adits totaling 100 ft in length; one shallow collapsed shaft; 11 pits.	Four-ft-wide contact zone, strike N. 8° E., dip 75° NW, between dolomitic limestone and granodiorite. Moderate alteration with iron and manganese staining but no visible sulfide minerals. Seven samples: no gold detected; one select grab sample contained 0.5 oz/ton silver.
21	Blue Bird Claim	0160370776	One adit, 140 ft long, three shallow surface pits.	Adit driven to crosscut a contact between silicified schist and diorite dike. Six chip samples: gold and silver content at or below detection limits; trace elements present include arsenic, cobalt, fluorine, molybdenum, tungsten, copper and zinc.
22	Unnamed prospect	0160370778	One caved adit, estimated >100 ft long.	Limestone in contact with diorite. One grab sample: 0.026 oz/ton gold, <0.02 oz/ton silver.
23	Unnamed prospect	0160370781	Two caved adits, one estimated >500 ft in length, the other estimated <100 ft long; two shallow pits.	Silicified limestone (?) near contact with intermediate dike. Two grab samples: no detectable gold or silver. The prospect is one of several located on an old road constructed between the Lost Packer Mine and "quarries" which supplied iron-bearing flux material to the smelter at Ivers townsite (Ross, 1934, p. 124).
24	Unnamed prospect	0160370780	Three shallow pits.	Disseminated fine-grained pyrite, altered to limonite, in quartzite. Two grab samples: one contained 0.006 oz/ton gold; silver <0.02 oz/ton. The prospect is one of several located on an old road constructed between the Lost Packer Mine and "quarries" which supplied iron-bearing flux material to the smelter at Ivers townsite (Ross, 1934, p. 124).
25	Unnamed prospect	0160370805	One 80-ft adit, one 20-ft adit, one surface cut, possibly a short, caved adit.	Dacite porphyry dike in granitic gneiss. Quartz vein and silicified shear zone contain some pyrite and malachite. Eight samples: seven chip samples contained trace to 0.05 oz/ton gold, a trace to 0.01 oz/ton silver, and 190 to 920 ppm copper; one grab sample contained 0.83 oz/ton gold, 0.21 oz/ton silver, and 2,300 ppm copper.
26	Unnamed prospect	0160370796	Shallow pit.	Quartz-potassium feldspar pegmatite dike in granitic gneiss. One grab sample: no gold or silver detected.

Appendix.--Summary of mines and prospects--Continued

Map No.	Property name	MILS sequence number	Workings	Summary
27	Unnamed prospect	0160370797	One dozer trench, one shallow pit.	Lightly iron-stained quartz veinlet in dacite porphyry. One grab sample: no gold or silver detected.
28	Unnamed prospect	0160370789	Two caved adits, estimated to total ≤ 100 ft in length, four shallow pits.	Quartz veins in schist intruded by dacite and granophyre dikes. Three samples: no gold detected in two grab samples and a chip sample; one of the grab samples contained 0.4 oz/ton silver; no silver detected in the other two samples.
29	Unnamed prospect	0160370790	One possible sloughed adit.	Silicified shear zone in chlorite schist near contact with rhyolite dike. One chip sample: no gold or silver detected.
30	Unnamed prospect	0160370800	Four shallow surface pits.	Light to moderately iron-stained quartz vein material in chlorite-muscovite schist. Four samples: no gold or silver detected in three grab samples and one chip sample.
31	Unnamed prospect	0160370708	Three caved adits, totaling about 150-200 ft in length, two shallow pits.	Quartz vein material, iron-stained, with some malachite, in schist. Three grab samples: one sample contained 0.062 oz/ton gold; no silver detected.
32	Unnamed prospect	0160370804	One pit.	Possible metasedimentary rock intruded by dike of intermediate composition. One grab sample: trace gold, no silver.
33	Unnamed prospect	0160370803	Shallow pit.	Bull quartz in massive, white quartzite. One grab sample: trace gold, no silver, 105 ppm copper.
34	Unnamed prospect	0160370802	Shallow pit.	Quartz vein, trace of pyrite and malachite, in biotite schist. One grab sample: no gold, trace silver.
35	Unnamed prospect	0160370801	One caved adit, estimated <30 ft long, two shallow pits.	Quartz vein material in schist, intruded by mafic dike. Two grab samples: one contained a trace of gold, but no silver; no gold or silver detected in the other sample.
36	Unnamed prospect	0160370792	Two caved adits, totaling estimated 400-500 ft in length one shallow pit.	Vuggy, iron-stained quartz vein material in schist. One grab sample: 0.076 oz/ton gold and 0.3 oz/ton silver.
37	Monte Cristo Mine	0160370570	Three caved adits, totaling more than 1,000 ft in length; six shallow exploration pits.	Quartz fissure-filling in chlorite-muscovite schist. Nine grab samples from dumps and stockpiles: <0.005 to 0.344 oz/ton gold, <0.02 to 1.9 oz/ton silver, and <0.01 to 0.10 percent copper.
38	Lucky Star Prospect	0160370255	Three adits and two shallow pits. One adit is caved but may be about 200 ft long. The other two adits are 190 ft and 80 ft long.	Quartz vein in fractures and shear zones in quartz monzonite. Six samples, five chip, one grab: grab sample of quartz and pyrite-arsenopyrite from dump of caved adit contained 0.146 oz/ton gold, 5.8 oz/ton silver and 0.22 percent copper; one chip sample contained 0.54 oz/ton gold, 4.2 oz/ton silver and 0.32 percent copper; one other chip sample contained 1.2 oz/ton silver.

Appendix.--Summary of mines and prospects--Continued

Map No.	Property name	MILS sequence number	Workings	Summary
39	Unnamed prospect	0160370833	Three adits totaling 176 feet in length.	Quartz-filled shears in granodiorite (?). Veins up to 2 ft thick. Slight iron and manganese staining. Minor pyrite and malachite. Five samples: three grab samples, one contained 1.87 oz/ton gold, 4.7 oz/ton silver, and 0.41 percent copper; two grab samples contained <0.005 oz/t gold, 0.2 oz/ton silver, and 0.14 percent copper. Two chip samples contained <0.005 oz/ton gold, 0.2 oz/ton silver, and 0.08 percent copper.
40	Unnamed prospect	0160370834	Two small cuts totaling 5 feet in length, each dug into cliff.	Schist, gneiss, and quartzite intruded by rhyolite or andesite dikes. Broken rock strongly silicified. The workings are on a shear zone striking S. 80° E. and dipping steeply to the north. Two chip samples: no gold or silver detected.