UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

# Preliminary Mineral Resource Assessment of the Tonopah $1^{o}$ by $2^{o}$ Quadrangle, Nevada

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## INTRODUCTION

This map and report are part of a folio of maps of the Tonopah $1^{o}$ by $2^{o}$ quadrangle, Nev. (fig. 1), prepared under the auspices of the Conterminous United States Mineral Assessment Program (CUSMAP). This program provides basic and interpreted geologic data for long-range national mineral resource policy and aids in Federal and State government and industry decisions concerning land-use and resources. The Tonopah quadrangle contains notable gold-silver deposits and has a history of production of turquoise, molybdenum, lead, and zinc among many other commodities. This report brings basic geologic, geophysical, and geochemical data collected from 1982-1986 together with published data on mineral deposits to assess the potential for undiscovered mineral resources within the study area.

This Tonopah mineral resource assessment is preliminary and consists of descriptive models for 15 deposit types, grade-tonnage models for 14 of them, listings of known mineral occurrences tabulated according to the deposit types of interest, the location of tracts permissive for the occurrence of such deposits, and estimates of the number of undiscovered deposits for five of the deposit types. The listings of mineral occurrences are modified from a retrieval of all mineral occurrences listed in the U.S. Geological Survey's Mineral Resource Data System (MRDS) as of September, 1985. Two 1:250,000 scale maps (pl. 1, 2) show the tract locations on a generalized geologic and topographic base (D.C. Whitebread, unpub. data, 1986). Plate 1 shows areas of permissive rock and tracts for epithermal gold-silver veins, sediment-hosted gold-silver, hot-spring gold-silver, and simple antimony deposits. Plate 2 has the tracts permissive for the occurrence of deposits that may be related to intermediate to felsic intrusions including tungsten, copper, lead, iron,and zinc skarns, polymetallic veins, polymetallic replacement, and porphyry copper and low-fluorine porphyry molybdenum deposits.

## GEOLOGIC SETTING

The Tonopah $1^{o}$ x $2^{o}$ quadrangle, Nevada, covers over 19,000 $km^{2}$ in central Nevada. The region is largely dominated by the alternating north-trending valleys and mountain ranges of the Basin and Range physiographic province. Exposures of bedrock are limited to the ranges which occupy about 50 percent of the total area. The major mountain ranges and valleys are shown in figure 2.

Pre-Tertiary non-plutonic rocks are evenly distributed throughout the study area. Late Precambrian and Paleozoic rocks mainly crop out in the eastern two-thirds of the quadrangle while Mesozoic sedimentary rocks and volcanics occur in the west part of the area. A variety of depositional environments are represented by the pre-Tertiary rocks including continental margin, island arc, and ocean floor. Many of these units were accreted onto the North American craton and compose the deformed rocks of the Roberts Mountain and Golconda allochthons. To the east, the allochthonous rocks give way to non-accretionary carbonate and clastic rocks deposited in shelf and shallow marine environments. Early Mesozoic island-arc related rocks and late Paleozoic volcaniclastic rocks of the Walker Lane terrane crop out in the western part of the quadrangle (N.J. Silberling, oral commun., 1986).

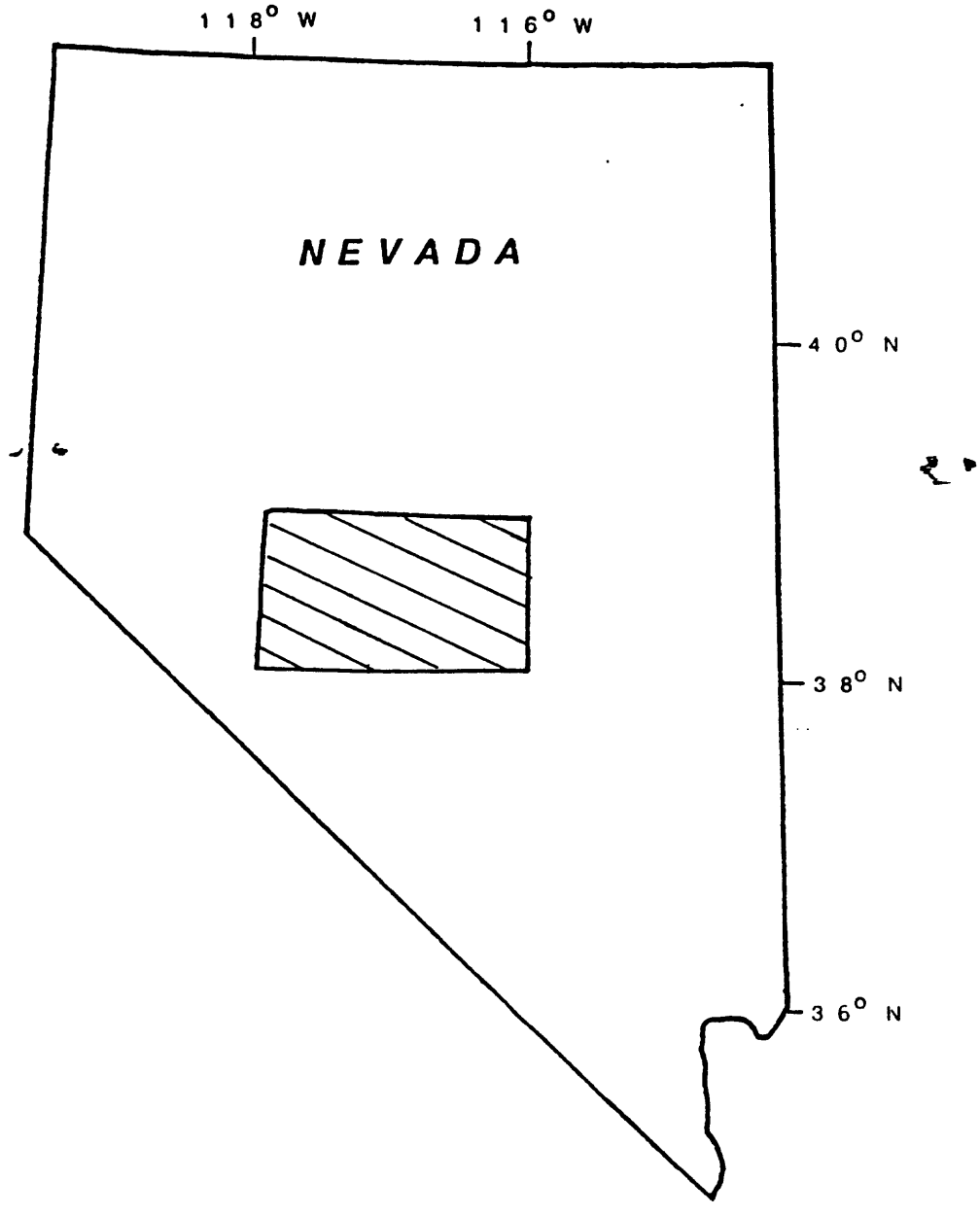


Figure 1. Location of the Tonopah 1° by 2° quadrangle, Nevada.

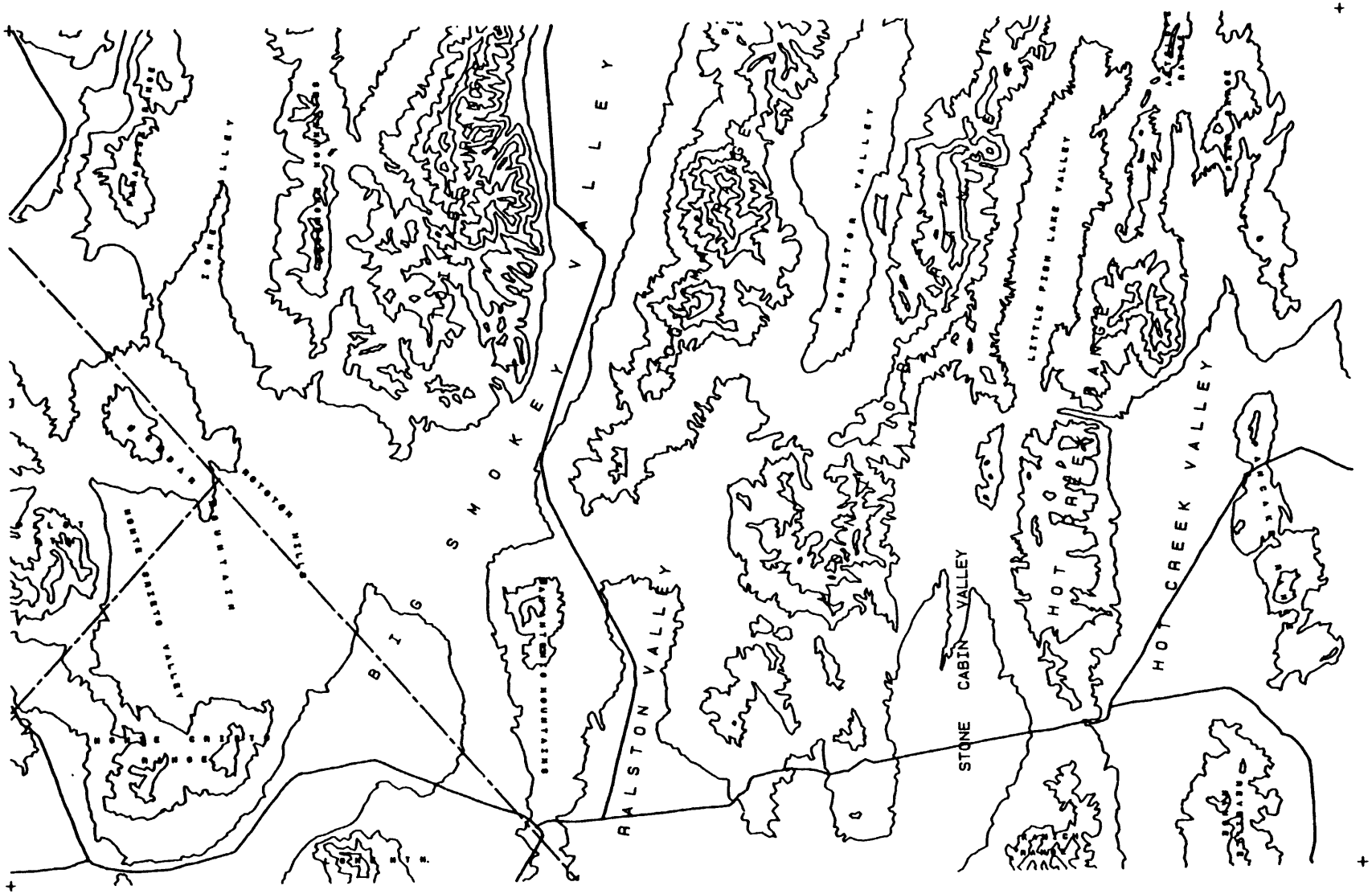


Figure 2. Valleys and mountain ranges of the Tonopah 1° x 2° quadrangle, Nevada.

Most of the granitoid rocks are also pre-Tertiary. Over 55 plutons crop out within the boundaries of the quadrangle, with the majority found in the central and western ranges. The oldest intrusions are small Triassic to early Jurassic granodiorite and quartz monzodiorite bodies in the southwest part of the quadrangle. These intrusions occur in the Monte Cristo Range, southern Royston Hills, and the San Antonio Range. The largest intrusions are biotite granites which range in age from 80 Ma to about 100 Ma. These Cretaceous plutons tend to be locally foliated, have little clearly associated mineralization, and include the Lone Mountain pluton, the large intrusions in the southern Toquima Range, and several of the bodies in the Paradise Range (D.A. John, written commun., 1984).

Other late Cretaceous granitic rocks are associated with several types of mineralization. Porphyritic granodiorites in the west part of the quadrangle are small and commonly have associated skarns and polymetallic vein deposits. These bodies occur in the Paradise and Toiyabe Ranges, Cedar Mountain, and the Pilot Mountains. Granite porphyries occur in the San Antonio Range, Rock Hill, and Paradise Ranges. The Hall porphyry molybdenum deposit occurs in a small stock of this type in the San Antonio Range. Intrusions of mid-Tertiary age occur as granite and granodiorite in the Toiyabe and Toquima ranges (D.A. John, written commun., 1984).

Tertiary volcanic rocks compose over 75% of the rocks exposed in the in the mountain ranges. The earliest volcanic activity, which began about 40 Ma and continued until 34 Ma, is represented by largely intermediate-composition volcanic rocks with minor rhyolite in the eastern part of the quadrangle (R.F. Hardyman, written commun., 1986). From 33 Ma to 22 Ma, more explosive calc-alkaline volcanism deposited large volumes of ash-flow tuff and many of the calderas within the quadrangle were formed including the Big Ten Peak caldera (southern Monitor Range), the Northumberland caldera and the Mt. Jefferson complex (Toquima Range), and the Peavine and Toiyabe calderas (Toiyabe Range), among others. By 19 Ma, most volcanic activity consisted of basaltic to trachyandesite flows although younger, more silicic rocks were locally deposited. In addition to the volcanic rocks, the Tertiary rocks include fresh water sedimentary rocks that are often interlayered with volcanic rocks or contain a few layers of tuffaceous materials. These units are generally 10 to 16 Ma (Kleinhampl and Ziony, 1985) and include rocks of the Esmeralda Formation and the Siebert Tuff.

Quaternary rocks are largely restricted to basalts in the Pancake Range area and to alluvial fill of the large valleys formed by Basin and Range normal faulting. Basin and Range faulting initiated during the Miocene and has been recurrently active to the present.

## METHODOLOGY

The mineral resource assessment of the Tonopah quadrangle was made using the methodology developed for the Alaska Mineral Resource Assessment Program (AMRAP) (Singer, 1975; Singer and Ovenshine, 1979). This method results in a probabilistic, quantitative estimate of the mineral endowment of the study area by considering discovered and undiscovered mineral resources, including resources that may not be presently economic. The assessment is presented in a disaggregated manner to allow reevaluation as economic, technical, and socio-political conditions change. Previous CUSMAP assessments that have used this methodology include Medford, Ore. (Singer and others, 1983), Ajo, Ari.

(Peterson and others, 1985), and Walker Lake, Calif.-Nev. (W.D. Menzie, written commun., 1985).

The AMRAP assessment methodology consists of three stages: (1) the development or adaptation of descriptive and grade-tonnage models for deposit types that do or may occur within the study area, (2) the delineation of areas permissive for the occurrence of each selected deposit type using geologic, geochemical, and geophysical data, and (3) the estimation by a team of experts of the number of undiscovered deposits of each type likely to occur within the the quadrangle for the delineated areas.

The deposit types listed in table 1 were considered appropriate for inclusion in the assessment because the style and geology of the mineralization within the quadrangle best fit in these categories or the geology is similar to that of deposits found in other parts of the western United States. These deposit types are defined in Cox and Singer (1986), which also was a source for many of the grade-tonnage models. Additional models were developed and others modified for use here. Many types of deposits that are known to occur within the Tonopah quadrangle were addressed in the assessment process, but not included in this report due to report length considerations. Deposit types not considered here consist of most of the nonmetallic and minor metallic deposits including barite and fluorite veins, placer deposits of several types, diatomite, perlite, mercury, and magnesite.

In general, we estimated resources that might occur within 1 km of the surface. Two different teams of experts were involved in determining the tracts and estimating the number of undiscovered deposits. Because of the large number of geologists with differing areas of expertise, not all differences were resolvable and these differences are noted in the deposit or tract descriptions. For those deposit types for which a consensus could be achieved, group estimates are presented.

The evaluations are presented as follows. Deposit types are individually described with a list of favorable regional criteria for their occurrence. In addition, grade-tonnage models, presentation of mineral occurrences that might be related to each type of deposit, and a discussion are presented where appropriate. Lastly, the estimation of resources is presented with some additional discussion. Individual tract discussions are presented for epithermal gold-silver veins, hot-spring gold-silver, sediment-hosted disseminated gold-silver, and simple antimony in appendix A and those for porphyry copper or molybdenum, polymetallic veins and replacement, and skarns are presented in appendix B.

## DEPOSIT CLASSIFICTION AND ASSESSMENT

### Tungsten Skarns

#### Deposit Description

In tungsten skarn deposits, scheelite-bearing skarn occurs in argillaceous carbonate rocks in, or near, the contact zone of calc-alkaline granitic intrusions. The mineralization may conform to the contact of the intrusion with the country rock or, more commonly, extend away from the intrusion along preferred bedding (commonly the lowest carbonate unit) that has favorable porosity or composition. The intrusive rocks generally show little sign of alteration beyond a narrow zone of endoskarn. Tungsten skarn

deposits are widely distributed in Nevada and several deposits have been exploited within the Tonopah quadrangle including the Gunmetal and Victory Tungsten Mines.

Most deposits in Nevada are associated with Cretaceous batholiths, stocks, sills, and dikes that were emplaced at depth adjacent to calcareous rocks. The best tungsten skarn possibilities in the quadrangle are in the western part where there are more exposed and inferred plutonic rocks than in other areas. In this area, there are abundant Paleozoic and Mesozoic sedimentary rocks. At the regional scale, most of the mapped sedimentary units contain an appreciable component of carbonate rock. Grade and tonnage models for tungsten skarns are presented in table 2.

### Favorable Criteria

Permissive Host Lithology: Limestone and other calcareous sedimentary rocks. In Nevada, the host rock ages range from Cambrian to Jurassic-Triassic.

Associated Volcanic/Intrusive Rocks: Calc-alkaline, generally coarse-grained, porphyritic dikes, sills, stocks, and batholiths, intrusions having compositions ranging from alaskite to granodiorite. Most deposits in Nevada are associated with small Cretaceous granodiorite bodies.

Alteration: Metasomatic formation of garnet, pyroxene, and scheelite is most diagnostic.

Geochemical Signature: tungsten (W), molybdenum (Mo), zinc (Zn), copper (Cu), bismuth (Bi), tin (Sn), beryllium (Be), arsenic (As).

Associated Deposit Types: Tin-tungsten skarns, zinc skarns, porphyry molybdenum deposits. Occurrences in the Tonopah quadrangle of W in skarns and of Mo are listed in table 3.

### References

Cox, 1986d; Einaudi and others, 1981; Elliott, 1982.

## Porphyry Copper

### Deposit Description

Porphyry copper deposits generally are large-tonnage, low-grade deposits in which copper sulfides (largely chalcopyrite) occur as disseminations or stockwork veins associated with porphyritic calc-alkaline intrusions. The intrusions are most commonly granodiorite or tonalite and usually have an aphanitic groundmass. Wall rocks, which may also be mineralized, include adjacent plutonic rocks, intermediate to mafic volcanic rocks, calcareous sedimentary rocks, and any competent, closely fractured rocks. Deposits are largely Mesozioc and Cenozioc but other ages are known. In some areas, cauldron subsidence and the eruption of ashflow sheets is believed to disrupt the accumulation of volatiles and metals and destroy any existing metal concentrations. No porphyry copper deposits are known in the Tonopah quadrangle, but several have been identified in the adjacent Walker Lake quadrangle (W.D. Menzie, oral commun., 1985), notably the Yerington deposit. Tonnage and grade models for porphyry copper are listed in table 4.

Favorable Criteria

Permissive Host Lithology: High-level calc-alkaline intrusions and intruded rocks.

Associated Volcanic/Intrusive Rocks: Quartz diorite to monzogranite and syenite with evidence of several phases of intrusion, one of which is a porphyry commonly with a microaplitic groundmass.

Alteration: Potassic, sericitic, and argillic. Also, sodic-calcic, propylitic, and, occassionally, advanced-argillic alteration are reported.

Geochemical Signature: An association of Cu with Mo, gold (Au), silver (Ag), W, boron (B), and (or) strontium (Sr) near the center of the deposit with possible lead (Pb), Zn, Au, As, antimony (Sb), selenium (Se), manganese (Mn), and barium (Ba) in distal areas.

Associated Deposit Types: Lead-zinc skarn, polymetallic replacement, copper skarn, replacement manganese deposits, porphyry copper-molybdenum, porphyry copper-gold. Occurrences of Pb, Zn, and Cu within the Tonopah quadrangle are listed in table 5.

Additional Geologic Features: Stockworks of quartz veinlets are strongly favorable for this deposit type.

References

Cox, 1982; Cox, 1986c; Sillitoe, 1979.

## Skarns: Iron Skarn, Copper Skarn, Lead-Zinc Skarn

Deposit Description

Iron, copper, and lead-zinc skarns are hosted by calcareous rocks adjacent to dioritic to granitic intrusive rocks. With the exception of copper skarns related to porphyry copper deposits, the intrusions associated with these skarns are generally unmineralized. Other copper skarns and lead-zinc skarns may be distal to the intrusive contact. Other copper skarns tend to be smaller than those associated with porphyry copper deposits. Lead-zinc skarns tend to occur along structural or lithologic contacts and have poorly developed metamorphic aureoles. Iron skarns are dominated by magnetite and rarely may be associated with intrusions as mafic as gabbro.

Iron skarns, including the Phelps Stokes Mine, are known in the Paradise Range in the northwestern part of quadrangle. Scattered small base-metal skarns are reported in the western part of the quadrangle associated with Cretaceous intrusions. Models of grade and tonnage for these deposit types are in table 6.

Favorable Criteria

Permissive Host Lithology: Limestone and other calcareous sedimentary rocks.

Associated Volcanic/Intrusive Rocks: Mafic to felsic intrusive rocks of generally Tertiary or Mesozoic age.

Alteration: Metasomatic formation of garnet, epidote, and pyroxene, although this information may not be available at a regional scale. Development of gossan and potassic or phyllic alteration of the plutonic rock

are characteristic of some deposits.

Geochemical Signature: Varies according to dominant skarn mineralogy.
For iron skarns: iron (Fe), Cu, cobalt (Co), Au, and rarely Sn.
For copper skarns: Cu, Pb, Zn, Au, Ag, Mo, and W.
For lead-zinc skarns: Zn, Pb, Cu, Co, Au, Ag, W, Sn, fluorine (F), and Mn.

Associated Deposit Types: Porphyry copper and molybdenum deposits, other skarns, and polymetallic replacement deposits. Occurrences and deposits of Cu, Pb, and Zn in the Tonopah quadrangle are listed in table 5.

References

Cox, 1986x; Cox, 1986b; Cox and Theodore, 1986; Einaudi and Burt, 1982; Einaudi and others, 1981.

## Polymetallic Replacement

Deposit Description

These deposits are large, high grade, epigenetic deposits that form massive lenses, pipes, and veins in carbonate rocks. The carbonate host rocks are believed to form in broad sedimentary basins. The mineralization process is replacement by solutions emanating from epizonal plutons and volcanic systems. The Ag-Pb-Zn-Cu mineralization is localized along faults, bedding planes, and prexisting solution channels. The polymetallic replacement grade and tonnage models are listed in table 7.

Favorable Criteria

Permissive Host Lithology: Sedimentary rocks, especially limestone, dolomite, and shale, commonly with associated overlying volcanic rocks.

Associated Volcanic/Intrusive Rocks: Porphyritic calc-alkaline intrusions.

Permissive Structure: Faults, possibly calderas.

Alteration: Dolomitization, silicification. Also argillization and where the rocks had syngenetic iron oxides, pyritization.

Geochemical Signature: Zoning outward of Cu, Pb, Ag, Zn, and Mn. Locally Au, As, Sb, and Bi may be diagnostic.

Associated Deposit Types: Lead-zinc skarn, copper skarn, porphyry copper. Pb, Zn, and Cu occurrences within the Tonopah quadrangle are listed in table 5.

References

Morris, 1986; Morris and Lovering, 1979.

## Polymetallic Veins

Deposit Description

Polymetallic veins constitutes a rather broad deposit type, which includes multiphase quartz-carbonate veins containing base-metal sulfides with

associated Au and (or) Ag. The grade-tonnage model for this deposit type (table 8) does not include polymetallic veins mined primarily for their precious-metals which may belong to a separate deposit type. Within the Tonopah quadrangle precious-metal vein systems with abundant base-metal sulfides have been classified within the epithermal gold-silver vein model and are assummed to be Comstock-style mineralization. Polymetallic veins are associated with hypabyssal intrusive rocks that include intermediate to felsic intrusive rocks as small bodies and dike swarms as well as andesitic to rhyolitic subvolcanic dikes, necks, and plugs. The veins extend into intruded rock of any composition, but tend to occur in areas of high permeability, commonly in fractures and breccias and at intrusive contacts.

### Favorable Criteria

Permissive Host Lithology: Any.

Associated Volcanic/Intrusive Rocks: Small intrusions and dike-swarms of diorite to monzogranite as well as subvolcanic intrusions of andesite to rhyolite.

Permissive Structure: Commonly areas of domal uplift in volcanic-plutonic belts associated with island arcs and continental margins.

Alteration: Widespread propylitic alteration with local sericitic and argillic alteration. Silicification is reported at some deposits, especially those in carbonate rock where jasperoid has formed.

Geochemical Signature: May be diverse and includes Zn, Cu, Pb, As, Au, Ag, Mn, and Ba. For some deposits, Sb may be of interest.

Associated Deposit Types: Porphyry copper-molybdenum, low-fluorine porphyry molybdenum, polymetallic replacement, lead-zinc skarn, and placer gold deposits. Occurrences of Cu, Pb, and Zn within the Tonopah quadrangle are listed in table 5.

### References

Cox, 1986e; Sangster, 1984.

## Low-Fluorine Porphyry Molybdenum

### Deposit Description

Low fluorine porphyry molybdenum (hereafter referred to as porphyry molybdenum) deposits occur as fine-grained molybdenum and quartz veinlets and less commonly as disseminations accompanied by large volumes of introduced silica and associated with generally small, porphyritic, quartz-dioritic to granitic intrusions. The intrusions are generally multiphase. These deposits are deficient in fluorine compared to Climax-type porphyry molybdenum deposits, but may contain as much as 1,000 parts per million (ppm) fluorine. Low-fluorine porphyry molybdenum deposits probably form deeper than most porphyry copper deposits. Within the western United States most of these deposits have Cretaceous to Tertiary ages; some Tertiary deposits are apparently found in volcanic rocks such as vent breccias, but are not well-documented in the literature. The estimate of undiscovered deposits does not consider possible Tertiary deposits in volcanic rocks because of the difficulty in establishing evaluation criteria. However there is potential for these deposits within the study area. The low-fluorine porphyry

molybdenum grade and tonnage models are given in table 9.

### Favorable Criteria

Permissive Host Lithology: Felsic porphyries and adjacent country rock.

Associated Volcanic/Intrusive Rocks: Quartz diorite to alaskite with evidence of several intrusive phases. Phases known to be related to mineralization commonly have a quenched porphyritic texture. Within the western Cordillera, the intrusions are generally early Cretaceous to late Tertiary.

Permissive Structure: Pervasive local faulting.

Alteration: Potassic grading outward to propylitic with possible phyllic and (or) argillic and intermediate argillic overprinting; also sericitic alteration. Widespread quartz stockworks are definitive of the deposit type.

Geochemical Signature: Mo and Cu, with or without W and (or) F (generally <1000 ppm). Anomalous Cu, Ag, Zn, Pb, Au, and As are commonly present but less distinctive.

Associated Deposit Types: Polymetallic veins, tungsten skarns, molybdenum-bearing skarns. Occurrences of Mo within the Tonopah quadrangle are listed in table 3 as are occurrences of tungsten skarns which may be related to porphyry molybdenum systems.

Additional Diagnostic Features: Magnetic and (or) gravity highs suggesting buried plutons.

### References

Blake and others, 1979; Hollister, 1978; Theodore and Menzie, 1984; White and others, 1982.

## Epithermal Gold-Silver Veins

### Deposit Description

This deposit type is a composite of the Comstock epithermal vein and Sado epithermal vein deposit classifications. Both types of deposits occur in very similar environments except that they overlie different types of basement rock, clastic sedimentary rocks and volcanic rocks, respectively. The Comstock systems generally contain appreciable Pb and Zn whereas the Sado systems do not. In the Tonopah quadrangle, both types of basement are present, pervasive, and difficult to distinguish at regional scale. Therefore, these deposit types are jointly for this assessment and a combined grade-tonnage model is used (table 10).

### Favorable Criteria

Permissive Host Lithology: Subaerially-deposited volcanic rocks of intermediate to felsic composition and adjacent sedimentary rocks.

Associated Volcanic/Intrusive Rocks: Calc-alkaline and bimodal volcanic systems; hypabyssal domes and other intrusions.

Permissive Structure: Through-going fracture systems, major normal faults, ring-fracture zones, joints.

Alteration: Silicic, propylitic, argillic, potassic; Extent varies considerably. Limonite is generally present. The alteration may be crudely

zoned.

Geochemical Signature: Association of Au and Ag. Other elements may include Cu, As, Sb, mercury (Hg), Pb, Zn, tellurium (Te) and, possibly, Ba, F, and W.

Associated Deposit Types: Placer gold, volcanic-hosted copper-arsenic-antimony, simple antimony, hot-spring mercury. Au and Ag occurrences within the quadrangle are listed in table 11, Sb and Hg deposits and occurrences are listed in table 12.

### References

Berger, 1986; Boyle, 1979; Mosier and others, 1986a; Mosier and others, 1986b.

## Hot-Spring Gold-Silver

### Deposit Description

Hot spring gold-silver deposits are large-tonnage, low-grade deposits that formed in the near surface of hot springs. The deposits are characterized by extensive silicification and hydrothermal brecciation. The deposits may be associated with a surficial silica sinter that may have erratic elevated concentrations of Au, Ag, As, Sb, Hg, or thallium (Tl). The sinter is underlain by a zone of intense silicification of the country rock that represents multiple episodes of fracturing and self-sealing of the silica cap of the geothermal system. This brecciated, silicified zone may be of variable thickness and contains dispersed As, Sb, Au, Ag, and (or) Tl. Below the breccia zone may be found stockwork quartz-(adularia) veins that contain sporadic precious-metal or sulfide ore. Additional breccia zones in the form of veins, pipes, and dikes with precious metal or quartz-sulfide mineralization may be found below the stockworks.

Within the Tonopah quadrangle area, the Round Mountain and the Paradise Peak deposits are classified as hot-spring gold-silver deposits. Table 13 contains summary statistics of the grades and tonnages of hot-spring gold-silver deposits.

### Favorable Criteria

Permissive Host Lithology: Porphyritic, brecciated rhyolite of generally Tertiary or Quaternary age and any adjacent lithologies.

Associated Volcanic/Intrusive Rocks: Subaerial felsic volcanic centers, especially rhyolite domes.

Permissive Structure: Through-going fracture systems, brecciation.

Alteration: Massive silicification including sinter, quartz stockworks and veins, quartz-cemented breccias, and the presence of chalcedony and opal. For some deposits, the presence of adularia, alunite or pyrophyllite or acid leaching and argillization of host and country rock may be characteristic.

Geochemical Signature: Association of Au, As, Sb, Hg, Tl, and Ag; Ag increases with depth of system and As, Sb, Tl, and Hg decrease with depth. For some deposits W is characteristic.

Associated Deposit Types: Hot-spring mercury, placer gold, epithermal quartz-sulfide veins, simple antimony; epithermal gold-silver veins. Au and

Ag occurrences within the Tonopah quadrangle are listed in table 11. Sb and Hg occurences, which may be associated with gold mineralization, are listed in table 12.

References

Berger, 1985; Berger, 1986a; Graybeal, 1981.

**Sediment-hosted disseminated gold deposits**

Deposit Description

Sediment-hosted, disseminated gold-silver deposits, commonly referred to as Carlin-type deposits, are generally large-tonnage, low-grade deposits most commonly hosted by carbonaceous, silty limestone and dolomite or calcareous silt- and claystone. The Au in these deposits may be associated with silicic alteration and concentrated in jasperoidal areas, quartz veins, and other silicified rocks in shear zones, or may be evenly distributed in host rocks up to tens of meters from mineralizing structures. Within the Tonopah area, the Northumberland and White Caps deposits are classified as belonging to this deposit type. In addition, mineralization in the Reveille District may represent the silver-rich end memeber of this category. Grade and tonnage models for this deposit type are listed in table 14.

Favorable Criteria

Permissive Host Lithology: Sedimentary rocks of any age that contain permeable strata. Common host rocks include laminated to thinly-bedded silty or shaly carbonaceous carbonate rock, calcareous siltstones and shales, and bioclastic limestones.

Associated Volcanic/Intrusive Rocks: Rhyolitic to dacitic domes, flows, and intrusive bodies of Cretaceous to Tertiary age are spatially associated with most deposits.

Permissive Structure: Major high-angle faulting is present at all known deposits. This includes normal faults, strike-slip faults, and (or) those associated with caldera collapse. Many of the known deposits occur near the crests of regional antiforms. Thrust faults are present at some deposits.

Alteration: Decalcification, silicification, addition or remobilization of carbonaceous material, and oxidation characterize these deposits. Because these effects may be localized, alteration related to sediment-hosted disseminated gold deposits may not always be recognizable at regional scales.

Geochemical Signature: Association of Au, As, Sb, Hg, and Tl. For some deposits Ba, Ag, W, Te, Se, Mo, F, or cadmium (Cd) may be important.

Associated Deposit Types: Placer gold deposits, simple antimony, and (or) barite veins. Au and Ag occurrences within the study area are listed in table 11. Sb and Hg occurrences which may be related to gold mineralization are listed in table 12.

References

Bagby and Berger, 1986; Berger, 1986b.

## Simple Antimony

### Deposit Description

Simple antimony deposits occur as relatively high-grade quartz-stibnite vein deposits (where the grade in part represents hand-sorting of the ore) and as lower-grade disseminated deposits. "Simple" refers to the dominant economic mineral in these deposits being stibnite, because while other minerals of interest are present, they are not present in economic amounts. These deposits are frequently associated with other deposits related to intrusions and volcanic activity. Grades and tonnages for both vein and disseminated simple antimony deposits can be found in table 16.

### Favorable Criteria

Permissive Host Lithology: Deposits within Nevada are found in chert, limestone, calcareous shale, sandstone and quartzite, rhyolitic to andesitic volcanic rocks, and felsic to intermediate intrusive rocks. In addition to these rock types, deposits outside of Nevada have been reported in slate, argillite, siltstone, chert, mafic volcanic and plutonic rocks, some metamorphic rocks, and rarely ultramafic rocks.

Associated Volcanic/Intrusive Rocks: Any mafic to silicic intrusive volcanic or plutonic rock.

Alteration: Silicic, sericitic, argillic, and, in some cases, chloritic alteration.

Geochemical Signature: Sb with or without Fe, As, Au, and Ag. For some deposits Hg, W, Pb, and Zn may be useful.

Associated Deposit Types: Other veins systems containing Sb that are mined primarily for other metals (i.e. polymetallic veins), low-sulfide quartz-gold veins, epithermal gold-silver veins, sediment-hosted disseminated gold-silver, hot-spring gold-silver tin-tungsten veins, hot-spring and disseminated mercury, and gold placers. Sb and Hg occurrences within the Tonopah quadrangle are listed in table 12.

### References

Bliss and Orris, 1986; Lawrence, 1963; White, 1962.

## Bedded barite

### Deposit Description

Bedded barite deposits are large, high-grade deposits mined predominantly for production of drilling muds. The deposits are stratiform and usually exceed 60 percent $BaSO_4$. These deposits exhibit many primary depositional features such as crossbedding, but most have at least a small component of replacement mineralization such as baritized brachiopods. In Canada and Europe, many bedded barite deposits are intimately associated with sedimentary-exhalative zinc-lead deposits, but a similar relationship has not been identified for deposits in the United States. Nevada is the largest producer of barite in the U.S. and has extensive resources, including millions of tonnes of ore in the Toquima Range and other parts of the Tonopah quadrangle. Grade and tonnage models can be found in table 17.

Favorable Criteria

Permissive Host Lithology: Generally Proterozoic to Paleozoic dark-colored chert, shale, mudstone, limestone, or dolostone. Quartzite, argillite, and greenstone have also been reported in the host sequences. In Nevada, most known deposits occur in Ordovician and Devonian carbonaceous sedimentary sequences consisting largely of chert, shale, and argillite, some limestone and shale, and minor claystone, quartzite, and volcanic rocks.

Geochemical Signature: Ba.

Associated Deposit Types: None known in Nevada. Elsewhere these deposits are associated with sedimentary exhalative zinc-lead deposits and (or) stratiform manganese deposits. Barite occurrences are listed in table 6.

References

Brobst, 1980; Orris, 1985; Orris, 1986a; Papke, 1984.

## Turquoise

DEPOSIT DESCRIPTION

Turquoise is a hydrated copper-aluminum phosphate ($CuAl_6(PO_4)_4(OH)_8 \cdot 5H_2O$) that occurs at shallow depths (rarely exceeding 50 m) in supergene oxidized environments. It occurs as sky-blue to green cryptocrystalline masses of varying hardness. The best stones are generally deep sky-blue and approach a hardness of 6 on the Moh's scale. For some turquoise, the color fades with time and exposure, decreasing the value. Some stones of inferior color and hardness can be treated to improve these features. Minerals that may occur with turquoise, or be mistaken for turquoise, include variscite ($AlPO_4 \cdot 2H_2O$), green chalcosiderite ($CuFe_6^{+3}(PO_4)_4(OH)_8 \cdot 4H_2O$), and chrysocolla ($(Cu,Al)_2H_2Si_2O_5(OH)_4 \cdot nH_2O$).

Nevada had produced over $30,000,000 in raw turquoise by the mid-1960's (Morrissey, 1968). Most turquoise mining in the state has been done intermittently on a small scale with some of the occurrences reportedly first worked by Indians. Turquoise is the only gem mineral with significant production found within the quadrangle. The 31 identified mines and occurrences (table 18) are scattered throughout the quadrangle with the largest producers clustered in the Royston Hills and Cedar Mountain near the Esmeralda-Nye Counties border. An informal estimate by the authors indicates that total production of turquoise within the Tonopah quadrangle may have exceeded $15,000,000, putting turquoise in the top five in value of the commodities produced there.

In Nevada, turquoise usually forms nodules, veinlets, and some slabs along fractures, bedding planes, and shear zones in altered host rocks. Known host rocks include altered and metamorphosed volcanic, sedimentary, and, rarely, plutonic rocks. The localities within the study area are described as being found in argillized quartzite, shale, slate, limestone, greenstone, quartz monzonite, quartz porphyry, and rhyolite.

Favorable Criteria

Permissive Host Lithology: Known host rocks include limestone, shale,

chert, quartzite, intrusive rocks, and metamorphosed volcanic and sedimentary rocks.

Associated Volcanic/Intrusive Rocks: Commonly intermediate to felsic intrusions.

Permissive Structure: Extensive faulting and (or) brecciation.

Alteration: Pervasive argillic alteration.

Associated Deposit Types: Turquoise occurrences are commonly found in the supergene zones of porphyry copper and molybdenum deposits.

References

Morrisey, 1968; Pogh, 1915.

## TRACTS AND DATA

Much of the geologic data for tracts was derived from regional geologic maps and interviews with Tonopah CUSMAP team members. Because much of these data are still being compiled and interpreted, they should be considered preliminary and subject to revision. Because no regional alteration map was available before the assesment was completed, plate 1 shows altered areas noted by team members during their field studies that are not known to be in the published literature but which were important in determining the size and location of the tracts.

Interpreted gravity and aeromagnetic data (Donald Plouff, written commun., 1986) became available after the team members met to delineate tracts and estimate the number of deposits. The gravity data were used to adjust tract boundaries, especially in the eastern part of the quadrangle where Paleozoic sedimentary rocks appear to extend under the volcanic rocks at shallow depths. Changes in tract boundaries mostly affect polymetallic vein and replacement deposits amd sediment-hosted gold-silver deposits. Because most of the extensions of permissive rock would be near the depth limit for determining mineral resources and the Paleozoic rocks in these areas are highly faulted and discontinuous over short distances, it is believed that the earlier estimations of numbers of deposits are still appropriate.

Aeromagnetic data suggest several areas of buried plutons. Most of these inferred intrusions are included in existing tracts. Where there is no additional indication of possible mineralization, these aeromagnetically anomalous areas have been shown as permissive areas on plate 2, but were not assigned a tract designation.

Although much of the stream-sediment geochemistry was released by Fairfield and others (1985), the easternmost part of the quadrangle was not included in that report. Stream-sediment data for areas not discussed in Fairfield and others were provided by J.T. Nash (written commun., 1985). Anomalous levels of As, Ag, Cu,, Mo, Pb, Sb, W, and Zn are those most commonly listed as part of the geochemical signatures of the deposit types that occur in the Tonopah quadrangle. Although other elements were used in determining potential resources, only these eight common diagnostic elements are reported in the tract descriptions. Levels of each of these elements considered to be anomalous for this report are listed in table 19. It should be noted that no stream sediment samples were collected downstream from known mines and deposits.

Listings of the types of deposits expected for each tract may be found in table 20 for plate 1 and in table 21 for plate 2.

## ESTIMATIONS OF UNDISCOVERED DEPOSITS

It is believed that the Tonopah quadrangle has extensive undiscovered resources, especially for gold. Results of this assessment indicate that there is a 90 percent chance that undiscovered sediment-hosted gold-silver, polymetallic vein, and epithermal gold-silver vein deposits are present within the study area. In addition, we estimate that there is a 50 percent chance that at least one additional deposit is present for each of the following deposit types: polymetallic replacement, hot-spring gold-silver, porphyry molybdenum, and tungsten skarn. Estimates of undiscovered deposits for sediment-hosted gold-silver, epithermal gold-silver veins, hot-spring gold, polymetallic replacement, and polymetallic veins were made by D.A. Singer, B.R. Berger, and G.J. Orris of the U.S. Geological Survey in February, 1986. These estimates are listed in table 22. Additional resource estimations and evaluations were made by members of the Tonopah CUSMAP team in March, 1986.

The favorable outlook for undiscovered deposits extends to the other deposit types described in this report. Additional copper and lead-zinc skarns and simple antimony deposits may be in the subsurface, but because of the small size of these deposits and the current relatively low total value of the contained metals, it is unlikely that these types of deposits will be targeted for exploration in the forseeable future. In addition to the known reserves and resources of barite and turquoise in the quadrangle, it is likely that with increased demand or price additional resources will be found, expecially as extensions of known mineralization.

Lastly, other, less economically significant, deposit types occur in the study area, but are not evaluated in this report. These include placer gold, diatomite, barite and fluorite veins, perlite, manganese, and magnesite/brucite deposits. These commodities were investigated during the study and will be reported on at a later time.

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## APPENDIX 1. DISCUSSION OF TRACTS ASSOCIATED WITH EPITHERMAL DEPOSITS DISPLAYED ON PLATE 1.

### TRACT E1: MONTE CRISTO RANGE

**Possible Deposit Types:** Epithermal gold-silver veins, hot-spring gold-silver, sediment-hosted disseminated gold-silver.

**Permissive Host Lithology:** Altered tuffs, Paleozoic and Tertiary sedimentary rocks; andesitic rocks.

**Associated Volcanic/Intrusive Rocks:** Rhyolite, andesite, basaltic andesite.

**Alteration:** Silicification in the form of opaline rock in tuffs and pre-Tertiary rocks, locally abundant jasperoid.

-A 15 Ma sedimentary unit (Blair Junction Formation?), included in map unit Ts (plate 1), is composed largely of fine-grained lacustrine sedimentary rocks and locally highly silicified. This unit is generally about 30 m thick and crops out at discontinuously throughout the Monte Cristo Range has been a main exploration target.

-Pre-Tertiary siliceous sedimentary rocks, including the Palmetto Formation, have been locally silicified, brecciated, and resilicified.

**Geochemical Anomalies:** Many samples of the silicified material contain anomalous base- or precious-metals. This area was sampled for stream sediments at a much higher density than most of the quadrangle in support of a local study as well as the assessment.

-54 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 34/As, 13/Ag, 26/Ba, 16/Sb.

**Known Mineral Occurrences:** Includes epithermal gold mineralization of the Gilbert District. Specifically:

-Au-bearing quartz veins in Tertiary tuffs and flows and in Ordovician Palmetto Formation, typically near masses of intrusive rhyolite.

-Hg-Au mineralization at Castle Rock Mine hosted by locally silicified tuff, breccias, and andesite.

**Recent Exploration/Development:** St. Joe American (?) was exploring highly silicified lacustrine sedimentary rocks of Miocene age that immediately underlie the Gilbert Andesite in approximately 1982-83. East of the St. Joe claims, Copper Range Co. drilled a similar silicified area in the same unit. Activity at both sites apparently ended with the exploratory drilling. Exploration activity by Anaconda was also noted in the Gilbert District area and Hudson Oil (?) was active in the South Gilbert area.

**Additional Favorable Geologic Features:** Gravity data indicate that sedimentary rocks may underlie most of the range.

**Discussion:** The Blair Junction Formation (?) lacustrine sedimentary rocks imply a water source for a possible mineralizing geothermal system. This unit has been a main exploration target during the 1980's.

**References:**
Albers and Stewart, 1972; Ferguson, 1928; Nash and others, 1985b.

## TRACT E2: SOUTHERN CEDAR MOUNTAIN.

**Possible Deposit Types:** Epithermal gold-silver veins, simple(?) antimony, hot-spring gold-silver, sediment-hosted disseminated gold-silver.

**Permissive Host Lithology:** Breccia, tuffs, sedimentary rocks. The sedimentary rocks in the southern part of the tract are largely Dunlap and Mina Formations; in the northern part of the tract, most of the sedimentary rocks are Luning Formation with minor Dunlap Formation.

**Associated Volcanic/Intrusve Rocks:** Andesite, rhyolite (restricted to a very small part of the tract).

**Alteration:** Breccia in much of this tract is highly silicified.
-At 16e there is scattered silicic, argillic, and propylitic alteration.

**Geochemical Anomalies:** This area was only erratically sampled for stream sediment geochemistry, possibly due to the difficulties in selecting representative drainage basins in areas of relatively low relief.
-11 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 1/As, 5/Ba.

**Known Mineral Occurrences:** Known mineralization includes epithermal veins. Specifically:
-Sb-Ag-Au veins at the Mickspot Mine.
-Numerous prospect pits in pre-Tertiary rocks.

**References:**
Albers and Stewart, 1972.

## TRACT E2A: NORTHERN CEDAR MOUNTAIN.

**Possible Deposit Types:** Epithermal gold-silver veins, sediment-hosted disseminated gold-silver, hot-spring gold-silver.

**Permissive Host Lithology:** Andesite, Luning and Dunlap Formations, tuff, Tertiary sedimentary rocks, rhyolite.

**Associated Volcanic/Intrusive Rocks:** Andesite, rhyolite, Cretaceous plutons.

**Alteration:** In area 2e, the tuffs are detached and propylitically altered.

**Geochemical Anomalies:** 23 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 4/Sb, 12/As, 3/Ag, 4/Ba.

**Known Mineral Occurrences:**
-Hg is reported at the Southview property.
-The Hyland Property has Ag-bearing veins.
-Base-metal veins with Ag occur at the Orizaba Mine and Farris Property.

**Discussion:** Base-metal and silver mineralization in this area largely appears to be related to the Cretaceous intrusions.

**References:**
Nash and others, 1985e; Ross, 1961.

## TRACT E3: ROYSTON HILLS.

**Possible Deposit Types:** Epithermal gold-silver veins, sediment-hosted disseminated gold-silver, hot-spring gold-silver.

**Permissive Host Lithology:** Silicic tuffs, andesitic flows and intrusive bodies. Sedimentary rocks are composed of Luning and Dunlap Formations to the north and Mina Formation to the south.

**Associated Volcanic/Intrusive Rocks:** Andesite, rhyolite.

**Permissive Structure:** Low- and high-angle faults.

**Alteration:** Scattered silicification. Small jasperoid bodies are present largely in the south part of the tract, but occur locally elsewhere.
-Propylitized zones are associated with andesitic rocks in the north part of the tract.

**Geochemical Anomalies:** This area was erratically sampled for stream sediments probably due to the low relief of the area.
-10 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 1/Sb, 3/As, 3/Ag, 6/Ba.

**Known Mineral Occurrences:** Epithermal gold-silver veins. Specifically:
-At the Farris property epithermal silver veins are found in andesite.

**Discussion:** Rhyolites probably postdate the faulting in the area. Most of the Tertiary units dip west 40-50 degrees.

**References:**
Albers and Stewart, 1972; Kleinhampl and Ziony, 1984.

## TRACT E4: STEWART VALLEY AND VICINITY.

**Possible Deposit Types:** Epithermal gold-silver veins, hot-spring gold-silver.

**Permissive Host Lithology:** Tuffs that are steeply tilted and strongly altered, andesite, Tertiary sedimentary rocks.

**Associated Volcanic/Intrusive Rocks:** Andesite, rhyolite.

**Alteration:** The volcanic rocks within the tract are extensively propylitized, argillized, and/or silicified.

-At 17e, propylitic alteration with local silicic and clay alteration.

-At 18e, argillic alteration with local silicic alteration and alunite.

-At 19e there is propylitic alteration, local silicific, argillic, and alunite.

-Argillic alteration can be found near 20e.

**Geochemical Anomalies:** This area was erratically sampled for stream sediments; possibly due to the low relief of the area.

-18 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 1/Sb, 5/As, 1/Ba.

**Known Mineral Occurrences:** Hot-spring gold-silver and epithermal vein mineralization. Specifically:

-Paradise Peak (FMC) hot-spring gold-silver deposit in silicified Tertiary andesite, silicic tuffs, and breccia.

-Numerous Hg occurrences.

-Numerous epithermal gold-silver vein mines and occurrences, including the Warrior and Omco Mines.

**Recent Exploration/Development:**

-FMC's Paradise Peak deposit began production in 1986.

-Exploration and drilling in this area by Freeport McMoran Gold Co. and Placer Amex (1985).

**References:**

Kleinhampl and Ziony, 1984; Nash and others, 1985; Ross, 1961.

## TRACT E4B: PILOT MOUNTAINS.

**Possible Deposit Types:** Sediment-hosted disseminated gold, epithermal gold-silver veins.

**Permissive Host Lithology:** Triassic sedimentary rocks including carbonates and volcaniclastic rocks of the Luning Formation, Paleozoic sedimentary rocks.

**Associated Volcanic/Intrusive Rocks:** Andesite, basaltic andesite, minor rhyolite.

**Permissive Structure:** Major high angle faults.

**Alteration:** Chiefly contact-metasomatic.

**Geochemical Anomalies:** This area was sampled for stream sediments at a much higher density than most of the quadrangle in support of a detailed local study.

-Over 40 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 14/Sb, 40/As, 5/Ag, 1/Ba.

**Known Mineral Occurrences:** No known epithermal Au or Ag, but there are abundant Hg deposits.

-Hg, Au, Ag, and base-metals occur in carbonate rock at the Drew Mine.

-Hg mineralization is associated with faulting at the Inman Mine.

-Hg occurs in veins and as disseminations at the Lakeview Mine and Wurtzler Prospect.

**Recent Exploration/Development:** A shallow drilling program was conducted by Development Associates of Spokane, Wa., on the lower southeastern slope of Table Mountain in the northern part of the tract. The target was skarn in the Luning Formation reported to contain Au, Sb, As, and Hg.

**References:**

Nash and others, 1985d; Ross, 1961.

## TRACT E5: PARADISE RANGE.

**Possible Deposit Types:** Epithermal gold-silver veins, sediment-hosted disseminated gold, hot spring gold.

**Permissive Host Lithology:** Tuff, Paleozoic and Mesozoic sedimentary rocks including Triassic Luning Formation carbonates and volcaniclastic rocks.

**Associated Volcanic/Intrusive Rocks:** Sparse rhyolite and andesite. Hypabyssal dikes. Mostly felsic igneous rocks, which are primarily Cretaceous granitic rocks.

**Alteration:** Argillic alteration, largely restricted to the basal part of the tuff.

**Geochemical Anomalies:** 28 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 13/As, 3/Ag, 2/Ba.

**Known Mineral Occurrences:** Precious-metal vein deposits. Specifically:

-Epithermal Au-bearing veins at the Flagstaff, Kohinoor, Vindicator, and Return Mines.

-Several Au-Ag vein occurrences at the north end of the tract.

-Precious- and base-metal veins at the Illinois and Key Flower Mines.

-Au-A-W at the White Diamond Mine.

-Hg at the Antelope Prospect.

**Discussion:** The area has numerous detachment surfaces; the tuffs are structurally detached from the underlying Mesozoic rocks. Sources for some of these tuffs were not identified within the quadrangle.

-The Luning Formation exhibits metamorphic grades of greenschist through very localized garnet grade (N.J. Silberling, oral commun., 1986). The permeability of the unit may have been decreased as a result, and therefore lessened the possibility of sediment-hosted disseminated gold-silver mineralization.

**References:**

Kleinhampl and Ziony, 1984.

TRACT E6: SOUTHERN SHOSHONE MOUNTAINS.

**Possible Deposit Types:** Epithermal gold-silver veins, sediment-hosted disseminated gold-silver, hot-spring gold-silver, simple antimony.

**Permissive Host Lithology:** Paleozoic shale and carbonate, tuffs, minor andesite.

**Associated Volcanic/Intrusive Rocks:** Minor andesite, rhyolite.

**Permissive Structure:** Toiyabe and Peavine calderas near southern and eastern boundaries of the tract.

**Alteration:** Generally weak alteration over large area with irregular small areas with stronger alteration.

-In the Secret Basin area (1e), widespread argillic alteration and silicification of quartz latite. South of the road that traverses this area, the rock is sericitized.

-Argillic alteration is present in Golden Wash.

-Two miles northeast of Peak 7465, the tuff is propylitized.

-The tuffs between Secret Basin and Golden Wash are densely welded, contain some zeolites, and have small quartz veins and chalcedonic stringers.

-There is jasperoid in the Luning Formation near Grantsville Summit.

**Geochemical Anomalies:** 83 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 4/Sb, 21/As, 2/Ag, 17/Ba.

**Known Mineral Occurrences:** Scattered occurrences, most thought to be epithermal in origin. Specifically:

-Ferir (Ledbetter) Mine has Au-bearing veins.

-Fluorite is present in hydrothermally altered tuff at Secret Basin and is exposed in pits at the west front of the range in Mesozoic rocks.

-Ag mineralization of unknown age.

-Hg mineralization in scattered localities in the northern part of the tract and localized along or near faults separating Mesozoic and Tertiary rocks.

-Many prospects explore quartz veins between Secret Basin and Golden Wash.

**Recent Exploration/Development:**

-Copper Range Co. has drilled Secret Basin; Royal Minerals drilled Golden Wash.

-Marshall Earth Resources is developing several properties near Ione.

-Amax and Sinclair Mining explored and blocked out a deposit mineable at $500/oz gold in the secondary dolomite of the Luning Formation near Grantsville Summit.

-Homestake Mining Co. has optioned the Ferir (Ledbetter) Mine.

**Discussion:** Known Tertiary mineralization is minor north of Ione Canyon. Other occurrences are in the most intensely altered areas.

The Paleozoic sedimentary rocks in the northern part of the tract have

been metamorphosed to greenschist facies; conodants indicate temperatures in the 300-350° C range (N.J. Silberling, oral commun., 1986).

**References:**
Kleinhampl and Ziony, 1984.

## TRACT E7: TOIYABE RANGE.

**Possible Deposit Types:** Epithermal gold-silver veins, sediment-hosted disseminated gold-silver, hot-spring gold-silver, simple antimony.

**Permissive Host Lithology:** Paleozoic rocks including phyllitic schist and limestone, welded tuff, tuff breccia, rhyolite.

**Associated Volcanic/Intrusive Rocks:** Tertiary granitic rocks including porphyries, rhyolite.

**Permissive Structure:** Toiyabe and Peavine calderas, a system of major north-trending normal faults.

**Alteration:** Tract boundaries are determined by broad areas of weak alteration and very scattered mineralization.
-At 3e, there is argillic and sericitic alteration with some limonitic staining.
-At 4e, sericitic and argillic alteration are reported.
-Near 5e, there are abundant small quartz veins, chalcedonic stringers, and some zeolitized tuff.

**Geochemical Anomalies:** 67 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 5/Sb, 30 As, 3/Ag, 21/Ba.

**Known Mineral Occurrences:** Abundant precious- and base-metal vein systems. Specifically:
-Horse Canyon Mine produced(?) Hg.
-Au--quartz-pyrite veins occur in the argillized and sericitized rock.
-Stibnite forms a simple antimony deposit(?) in pre-Tertiary rocks at the Wall Canyon Mine.
-Stibnite, galena, and sphalerite occur as very vuggy open-space fillings at Boyd Canyon.
-At or near 3e, on the South Fork of the South Twin River, Au-quartz-pyrite veins occur with much of the gold in clay alteration products.
-The altered area at 5e has lots of small prospects on quartz veins.
-Mineralization is associated with older rocks east of the caldera boundary.
-Near the Ophir pluton, the Murphy (Ophir) Mine and other prospects explore numerous Au-Ag-(Pb)-(Zn) veins. These systems may be related to the pre-Tertiary intrusions and not represent epithermal mineralization.

**Recent Exploration/Development:** Copper Range Co. drilled in Wall Canyon and on the Valley Group claims (table 5) in Jett Canyon near the dam.

**Discussion:** Mineralization in the northern part of the tract is probably

largely related to the Mesozoic plutonic rocks. Elsewhere the mineralization is probably Tertiary in age.

**References:**
Kleinhampl and Ziony, 1984.

## TRACT E9: TONOPAH-DIVIDE AREA.

**Possible Deposit Types:** Epithermal gold-silver veins, hot-spring gold-silver.

**Permissive Host Lithology:** Tuff, rhyolite, andesite, Tertiary Siebert Formation fresh-water deposits and tuffaceous rocks.

**Associated Volcanic/Intrusive Rocks:** Rhyolite domes and flows, andesite.

**Permissive Structure:** Possible caldera.

**Alteration:** Widespread alteration near e. Zoning outward from veins, the alteration in the Tonopah District includes potassium silicate, argillic and propylitic alteration with the propylitic alteration the most extensively developed. In some units, silicification is the dominant alteration. In the Divide district, limonite was reported at outcrops of lodes and the Tonopah-Divide lode was cut by layers of white sericite up to several inches thick. Silicification is also common in this district.

**Geochemical Anomalies:** This area was under-sampled for stream sediments because many basins were downstream form known mineralization.
-5 basins were sampled; stream sediment samples yielded the following anomalous Results (no. of basins/element): 4/As, 1/Ba.

**Known Mineral Occurrences:** Two ages of mineralization are known in the Tonopah District, with the bonanza silver-gold deposits formed during the earlier event and the lower grade mineralization in the Siebert Formation and Oddie Rhyolite formed during the later event. Mineralization in the Divide district is younger than the Siebert Formation (13-17 Ma) with silver distributed largely throughout the Fraction Tuff in zones of fracturing and shearing. More detailed information on the mineralization can be found in Bonham and Garside (1979).
-Hasbrouck Peak hot-spring gold-silver deposit in the Divide District.

**Recent Exploration/Development:** Hasbrouck Peak deposit recently discovered.

**Additional Favorable Geologic Features:** Gravity high is thought to indicate that the district is underlain by an intrusion. Also the presence of lacustrine deposits within the Siebert Formation (13-17 Ma) indicates water source for hot springs system.

**References:**
-Albers and Stewart, 1972; Bonham and Garside, 1979; Graney, 1984; Kleinhampl and Ziony, 1984; Nash and others, 1985c.

## TRACT E10: SAN ANTONIO MOUNTAINS.

**Possible Deposit Types:** Epithermal gold-silver veins, hot-spring gold-silver, sediment-hosted disseminated gold-silver(?).

**Permissive Host Lithology:** Tuff, rhyolite, andesite, basaltic andesite, Tertiary fluviolacustrine rocks (Siebert Formation), Paleozoic and Mesozoic sedimentary rocks including limestone, shale, chert, argillite, and volcanoclastic rocks.

**Associated Volcanic/Intrusive Rocks:** Rhyolite flow-domes, andesitic intrusions and flows, dacite porphyry (17 Ma), and lamprophyric dikes.

**Alteration:** Argillization, propylitization.

**Geochemical Anomalies:** 21 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 2/As, 10/Ba.

**Known Mineral Occurrences:** San Antone district- Cimarron and Liberty Camps.

**Recent Exploration/Development:** Intermittent exploration and claim maintenance activity.

**References:**

Kleinhampl and Ziony, 1984.

## TRACT E11: MANHATTAN DISTRICT AREA (SOUTHERN TOQUIMA RANGE).

**Possible Deposit Types:** Epithermal gold-silver veins, hot-spring gold-silver, sediment-hosted disseminated gold-silver, simple antimony.

**Permissive Host Lithology:** Tuff, Cambrian to Ordovician schist, quartzite, and calcareous sedimentary rocks, minor breccia.

**Associated Volcanic/Intrusive Rocks:** Rhyolite, andesite.

**Permissive Structure:** Manhattan caldera.

**Alteration:** Jasperoids occur locally.

**Geochemical Anomalies:** 35 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 1/Sb, 20/As, 3/Ag, 10/Ba.

**Known Mineral Occurrences:** Sediment-hosted disseminated gold-silver and epithermal gold-silver veins of the Manhattan district.

-Ba and F occurrences are present.

-Epithermal gold-silver veins are present in the volcanic rocks.

**Discussion:** D.R. Shawe (U.S. Geological Survey, Denver, Colo.) reports

that Au mineralization tends to be spatially related to the caldera boundaries. Abundant detailed data are available for this area in the report by Shawe and Lepry (1985).

**References:**
Ferguson, 1921; Kleinhampl and Ziony, 1984; Shawe and Lepry, 1985.

## TRACT E12: CENTRAL TOQUIMA RANGE.

**Possible Deposit Types:** Epithermal gold-silver veins, hot-spring gold-silver, sediment-hosted disseminated gold-silver, simple antimony.

**Permissive Host Lithology:** Tuff, Cambrian to Ordovician schist, quartzite, and calcareous sedimentary rocks, rhyolite, intracaldera tuffaceous sedimentary rocks.

**Associated Volcanic/Intrusive Rocks:** Rhyolite.

**Permissive Structure:** Toquima caldera complex- includes the Mount Jefferson (26.5 Ma), Moores Creek (27.2 Ma), and Trail Canyon (23.6 Ma) calderas as well as associated breccias and faults.

**Alteration:** Silicification, argillization.
-At 7e, is a large(?) area of argillic and silicic alteration.

**Geochemical Anomalies:** 39 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 15/As, 5/Ag, 15/Ba.

**Known Mineral Occurrences:** A variety of epithermal systems. Specifically:
-Hot-spring gold-silver mineralization of the Round Mountain District.
-Epithermal gold-silver veins of the Jefferson District.
-Ba and Hg occur in veins at the Senator Mine and the Wildcat Prospect.

**Recent Exploration/Development:** A new ore body was found southeast of Round Mountain. This body reportedly has a higher Ag:Au ratio than the previously known bodies. Smokey Valley Mining/Copper Range drilled alteration of east side of range and reportedly found an ore body (possibly in pre-Tertiary rocks and of the sediment-hosted disseminated gold-silver type).

**Discussion:** Abundant detailed geochemical data are available for this area in the publications by Shawe and Shawe and Leprey.

**References:**
Boden, 1986; Kleinhampl and Ziony, 1984; Shawe, 1977a, 1977b; Shawe and Lepry, 1985; Tingley and Berger, 1985.

## TRACT E13: NORTHUMBERLAND DISTRICT AREA (NORTHERN TOQUIMA RANGE).

**Possible Deposit Types:** Epithermal gold-silver veins, sediment-hosted

disseminated gold.

**Permissive Host Lithology:** Paleozoic sedimentary rocks including limestone, chert, shale, and felsic intrusive rocks.

**Associated Volcanic/Intrusive Rocks:** Jurassic quartz-diorite or biotite-hornblende granodiorite (153-156 Ma), rhyolite dome at Mt. Ziggurat (28 Ma, location e), Tertiary(?) felsic porphyry dikes.

**Permissive Structure:** Northumberland caldera, major normal faulting.

**Alteration:** Silicic, argillic.

**Geochemical Anomalies:** 25 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 1/Sb, 20/As, 7/Ag, 18/Ba.

**Known Mineral Occurrences:** Northumberland sediment-hosted disseminated gold deposit.

**Discussion:** Most of the Ba anomalies in this area are due to the presence of extensive bedded barite deposits.

**References:**
-Kleinhampl and Ziony, 1984; McKee, 1974; McKee, 1976.

## TRACT E14, SOUTHERN MONITOR RANGE.

**Possible Deposit Types:** Epithermal gold-silver veins, hot-spring gold-silver.

**Permissive Host Lithology:** Breccia, ash, tuffs of Shingle Pass (24.5-25.5 Ma), Kiln Canyon (24.1-25.1 Ma) and Saulsbury Wash (20.6-21.6 Ma).

**Associated Volcanic/Intrusive Rocks:** Big Ten Peak Rhyolite- one body in the south is 25 Ma, a body in the north dates at 24.5 Ma

**Permissive Structure:** Big Ten Peak Caldera (probably 26-27 Ma).

**Alteration:** Opalized tuff runs along the eastern range front; there are scattered silicified areas. Largest silicified area is on the southeast side of Big Ten Peak. Large argillized areas especially at 8e. Sericitic alteration associated with mineralization in some of the carbonate breccia blocks.

**Geochemical Anomalies:** 47 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 1/Sb, 9/As, 4/Ag, 17/Ba.

**Known Mineral Occurrences:** Most occurrences are in the Longstreet Distict and include epithermal gold-silver veins and molybdenum mineralization (79.9 Ma) in large carbonate megabreccia blocks ripped from the caldera walls and deposited locally. Some base metal sulfide veins, although hosted by the

carbonate blocks may represent Tertiary mineralization.

-Basemetal veins at the Mine Canyon mine (Last Chance claims, Black Hawk) are about 90 Ma based on sericite data. Similar veins occur in breccia blocks throughout tract.

**Recent Exploration/Development:** Drilling at the Kelly Mine (in George's Canyon and not listed in table 11) by unidentified company in 1984.

**Additional Favorable Geologic Features:** An ash-pumice unite locally contains cross-bedded lacustrine sedimentary rocks (26-27 Ma).

**References:**

Kleinhampl and Ziony, 1984.

## TRACT E15: SAULSBURY WASH.

**Possible Deposit Types:** Epithermal gold-silver veins, hot-spring gold-silver, sediment-hosted disseminated gold.

**Permissive Host Lithology:** Tuff, intrusive(?) rhyolite, minor andesite, Paleozoic sedimentary rocks, tuffaceous sedimentary rocks.

**Associated Volcanic/Intrusive Rocks:** Rhyolite plugs and domes, minor andesite, quartz diorite. In the northeastern part of the tract (6e), rhyolite dikes outcrop through the alluvium.

**Permissive Structure:** Possible Hannapah caldera.

**Alteration:** Area is highly bleached.

-At 21e, silicic to argillic to propylitic alteration zoning outward in this area.

-At 22e, siliceous alteration.

**Geochemical Anomalies:** 30 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 1/As, 2/Ag, 12/Ba.

**Known Mineral Occurrences:** Ellendale and Hannapah Districts where precious metal veins are largely associated with altered and brecciated tuff.

**Recent Exploration/Development:** Exploration of hydrothermally altered rocks just south of Highway 6 in 1984-85.

**Additional Favorable Geologic Features:** Presence of calcareous sinter, travertine indicating a fossil geothermal system.

**References:**

Kleinhampl and Ziony, 1984.

## TRACT E16: CENTRAL MONITOR RANGE.

**Possible Deposit Types:** Epithermal gold-silver veins, hot-spring gold-

silver, simple antimony, sediment-hosted disseminated gold-silver.

**Permissive Host Lithology:** Tuff, limestone and dolomite, quartzite, limestone breccia, minor Tertiary sedimentary rocks.

**Associated Volcanic/Intrusive Rocks:** Rhyolite, andesite (only in the northernmost part of the tract).

**Permissive Structure:** A caldera complex is centered in this vicinity.

**Alteration:** Silicification in the form of jasperoid associated with high antimony.
-At 10e, there is siliceous alteration and limonite.
-At 12e, there are jasperoids.
-The andesite is propylitically altered with irregular areas that have more argillic alteration.

**Geochemical Anomalies:** 50 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 2/Sb, 11/As, 2/Ag, 18/Ba.

**Known Mineral Occurrences:**
-Toro claims report Sb with Au and Ba in breccia.
-The King Solomon Mine exploits a simple antimony deposit.
-Ag mineralization is reported at the Last Chance Claims, Eagle Nest claims and other locations.

**Recent Exploration/Development:**
-At 13e, Noranda exploration for Au in the Tripon Pass Formation, including jasperoids in breccia at 12e.
-At 11e, Asarco (original Dome) claim blocks for Sb, Au.
-At 9e, Canyon Resouces drilling in 1986 in pre-Tertiary rocks, presumably for Sb, Au.
-In 1985, an unidentified company out of Idaho was drilling in the pre-Tertiary in the northernmost part of the tract.

**References:**
Kleinhampl and Ziony, 1984.

## TRACT E18: ANTELOPE-PARK RANGES.

**Possible Deposit Types:** Epithermal gold-silver veins, hot-spring gold-silver, sediment-hosted disseminated gold-silver(?).

**Permissive Host Lithology:** Tuff, andesite, minor Paleozoic carbonates.

**Associated Volcanic/Intrusive Rocks:** Andesite.

**Alteration:** Silicification of tuffs and Paleozoic rock near 24e.

**Geochemical Anomalies:** Area has anomalous Ba and Au in chip samples.
-4 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 1/As, 1/Ba.

**Known Mineral Occurrences:** None

**Recent Exploration/Development:** There was considerable active exploration during the study years in this area.
-At 24e, Asarco and others were exploring as of 1985 (thought to be in tuff).

**References:**
-Johnson and Benjamin, 1986a, 1986b.

## TRACT E19: MOREY PEAK AREA (NORTHERN HOT CREEK RANGE).

**Possible Deposit Types:** Epithermal gold-silver veins, hot-spring gold-silver, sediment-hosted disseminated gold-silver, simple antimony.

**Permissive Host Lithology:** Tuff, andesite, western and eastern facies Paleozoic sedimentary rocks.

**Associated Volcanic/Intrusive Rocks:** Rhyolite, very minor andesite.

**Permissive Structure:** Hot Creek Valley caldera complex, numerous small thrust faults, numerous high-angle faults.

**Alteration:** Local silicification of carbonate rock northwest of the Morey Peak area.
-The tuff of Williams Ridge and Morey Peak is hydrothermally and (or) propylitically altered in much of the area; locally tuffs are sericitized.
-At 15e and vicinity, jasperoids are present structurally complex Paleozoic rocks, generally adjacent to small thrust faults with hematitic alteration of underlying dolomite.
-Locally, there are areas of scattered quartz veining.

**Geochemical Anomalies:** Samples of jasperoid from this vicinity were anomalous in As, Hg, Mo, Sb, and Tl. 44 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 1/Sb, 7/As, 2/Ag, 16/Ba.

**Known Mineral Occurrences:** Multiple au-Ag veins at Morey Peak
-Au is reported at the CL Claims,
-Precious- and base-metals occur in the Magnolia vein.
-The American Eagle and Cedar veins have Au, Ag, and Cu.
-At Limestone Springs, there is Au, Ag, As, and Hg.

**Recent Exploration/Development:** Recent drilling northwest of Morey Peak by Long Lac for Au.

**References:**
John and others, 1986; Kleinhampl and Ziony, 1984; McDonnell, 1985; Nash and others, 1986; Sanders and others, 1986.

TRACT E20: SOUTHERN HOT CREEK RANGE.

**Possible Deposit Types:** Epithermal gold-silver veins, hot-spring gold-silver, sediment-hosted disseminated gold-silver, simple antimony.

**Permissive Host Lithology:** Paleozoic sedimentary rocks including carbonates, shale, chert, and quartzite, tuff, rhyolite, andesite, breccia, Tertiary sedimentary rocks.

**Associated Volcanic/Intrusive Rocks:** Rhyolite, andesite.

**Permissive Structure:** Large scale normal faulting.

**Alteration:** Silicification.

**Geochemical Anomalies:** 51 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 1/Sb, 13/As, 4/Ag, 20/Ba.

**Known Mineral Occurrences:** Polymetallic veins, epithermal veins(?). Specifically:
-Polymetallic veins in the Tybo Mine area.
-A gold find in the southern alluvial-filled valley may extend to west under tuffs (units dip west).
-Clifford District epithermal gold veins.

**Recent Exploration/Development:** At 14e, Long Lac exploration for gold.

**References:**
Kleinhampl and Ziony, 1984.

TRACT E22: KAWICH RANGE.

**Possible Deposit Types:** Epithermal gold-silver veins, hot-spring gold-silver.

**Permissive Host Lithology:** Tuff, minor rhyolite.

**Associated Volcanic/Intrusive Rocks:** 26 Ma intrusive porphyritic rhyolite that is glassy around its margin and looks fresh.

**Permissive Structure:** Kawich caldera, major faulting.

**Alteration:** Extensive, but relatively weak, argillization with minor silicification along faults.

**Geochemical Anomalies:** Samples with visible ore minerals had anomalous Ag values.
-8 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 1/Sb, 2/As, 1/Ag, 1/Ba.

**Known Mineral Occurrences:** Bellehelen District mineralization is largely

along faults and is mainly composed of argentite, some Ag chlorides, and some free gold.

**References:**
Kleinhampl and Ziony, 1984.

## TRACT E23: SQUAW HILLS.

**Possible Deposit Types:** Epithermal gold-silver veins, hot-spring gold-silver, sediment-hosted disseminated gold-silver.

**Permissive Host Lithology:** Tuff, breccia, limestone, quartzite(?), rhyolite, and Tertiary sedimentary rocks.

**Associated Volcanic/Intrusive Rocks:** Rhyolite.

**Permissive Structure:** Hot Creek Valley caldera complex.

**Alteration:** In the southern part of the tract, there is widespread argillic alteration.

**Geochemical Anomalies:** 28 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 8/As, 1/Ag, 10/Ba.

**Known Mineral Occurrences:** Two fluorite occurrences, one Sb-Ag vein.

## TRACT E24: REVEILLE RANGE.

**Possible Deposit Types:** Epithermal gold-silver veins, sediment-hosted disseminated gold-silver, hot-spring gold-silver, simple antimony.

**Permissive Host Lithology:** Tuff, andesite, carbonate, minor breccia, quartzite, rhyolite.

**Associated Volcanic/Intrusive Rocks:** Rhyolite, andesite.

**Permissive Structure:** Extensive faulting. A caldera has been postulated just southeast of the tract.

**Alteration:** bleaching, silicification, and sericitization near 23e.

**Geochemical Anomalies:** Chip samples from the Reveille District are anomalous in Ag, Pb, Sb, and Ba. Some samples from New Reveille and the Arrowhead Districts also ran detectable gold.
-15 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 1/Sb, 4/As, 1/Ag, 1/Ba.

**Known Mineral Occurrences:** Reveille, New Reveille, and Arrowhead Districts.
-Simple antimony deposits at the Antimonial and Eaton Mines.
-Epithermal gold-silver veins in Tertiary rocks in the Arrowhead

District.

-Ag-rich sediment-hosted gold-silver mineralization in the south central part of the tract.

-Ag and base-metals occur in veins at several locations including the Kietzke Mine.

**Recent Exploration/Development:** Gila Silver was doing extensive development 1982-1984.

**Discussion:** Paul Spor leached ore stockpiled by Gila in 1984, he was unable to recover enough Ag to make the operation profitable.

**References:**

Jones, 1985; Kleinhampl and Ziony, 1984.

## APPENDIX 2. DISCUSSION OF TRACTS ASSOCIATED WITH FELSIC INTRUSIONS, DISPLAYED ON PLATE 2.

### TRACT FI1: PARADISE RANGE.

**Possible Deposit Types:** Porphyry molybdenum and (or) copper, copper skarn, tungsten skarn, polymetallic vein, polymetallic replacement, iron skarn.

**Permissive Host Lithology:** Porphyritic felsic intrusions, Triassic marble, rhyolite. tuff, hornfels.

**Associated Volcanic/Intrusive Rocks:** Granodiorite, diorite, felsic porphyry, composite stocks; includes the Gabbs and Ellsworth plutons. These rocks are generally mid-late Cretaceous.

-At 1F there are intrusions of two different ages. The northern lobe is a coarse grained granite and approximately 100 Ma in age. The southern lobe is composed of three intrusions ranging a relatively fine grained granite to diorite.

-The Ellsworth pluton (2f) is a coarse grained porphyritic granite with minor skarn development.

-Composite stocks are found near 3f. These include the porphyry of Mentor Canyon which has a propylitized groundmass and was originally mapped as greenstone. Iron skarns are spatially associated with the Mentor Canyon intrusion.

-5f is the Cottonwood Stock, a fresh biotite granodiorite.

-At 15f. there is a granite porphyry with green sericite and a well-developed quartz stockwork.

**Alteration:**

-Extensive quartz-pyrite veins and sericitic alteration is present south of 2f.

-Pervasive secondary biotite in the Mentor porphyry.

-Extensive sericitic alteration near the Big Chief Mine (14f).

**Geochemical Anomalies:** 35 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 14/W, 2/Ag, 7/Mo, 2/Zn, 6/Cu, 4/Pb.

**Known Mineral Occurrences:** Includes tungsten and iron skarns, polymetallic vein mineralization, and occurrences of Cu and mineralization described as possibly base-metal replacement (Table 5). Specifically:

-Scattered tungsten skarns are found near the Gabbs pluton.

-The Victory Tungsten Mine is an endoskarn in the Illinois stock.

-Much of the mineralization in the Ellsworth District appears to be associated with nearby intrusions.

-Iron skarns (including Phelps-Stokes); all associated with the Mentar Canyon body.

-A reported Mo-bearing quartz stockwork at the prospect at 6F had no visible Mo according to D.A. John.

-Known porphyry molybdenum deposit in the UV Industries Property (table 3) at B&C Springs. The drill core is largely composed of quartz stockwork in carbonate rock, but very minor granitic rock was noted by J.T. Nash.

-Mineralization at Downeyville could be on the outer fringe of a porphyry copper system related to a nearby buried pluton. The mineralization consists of Pb-Ag veins.

-Polymetallic veins occur at 14f.

-There is visible Mo in the quartz stockwork at 15f.

**Additional Favorable Geologic Features:** Aeromagnetic data indicate additional intrusions and extensions of known intrusions within this tract.

**Reference:**

Kleinhampl and Ziony, 1984.

TRACT FI2: NORTHERN SAN ANTONIO MOUNTAINS.

**Possible Deposit Types:** Porphyry molybdenum, tungsten skarn, polymetallic vein, polymetallic replacement.

**Permissive Host Lithology:** Felsic to intermediate intrusions and adjacent calcareous sedimentary rocks.

**Associated Volcanic/Intrusive Rocks:** Felsic to dioritic stocks and dikes.

-Hall Stock is late Cretaceous (about 70 Ma) and is composed of two zoned stocks that tilt east about $70^{\circ}$ and are faulted on the west end.

-Fraziers Well Pluton is Triassic (about 220 Ma).

**Alteration:** The Fraziers Well pluton is propylitized. There is a wide variety of alteration near the Hall Stock.

**Geochemical Anomalies:** Eight basins were sampled; stream sediment samples yielded the following anomalous results ( no. of basins/element): 1/Zn.

**Known Mineral Occurrences:** Includes porphyry molybdenum, tungsten and base-metal skarns. Specifically:

-Hall (Nevada Moly) porphyry molybdenum deposit consisting of three ore bodies formed by three mineralizing events.

-The tungsten and base-metal skarns are related to the Fraziers Well pluton in the southern part of the tract.

-Near Rays Camp, there are Sb-Pb-Zn veins in siliceous sedimentary country rocks.

**Additional Favorable Geologic Features:**

- Aeromagnetic data indicate buried plutons east of the Hall Mine (table 3) and southwest of the Fraziers Well pluton.

-Gravity data indicate that the sedimentary rocks extend under the Tertiary volcanic units.

**Discussion:** There is no apparent mineralization related to the dike swarms found within the tract.

**References:**

Kleinhampl and Ziony, 1984; Shaver, 1984.

## TRACT FI3: PILOT MOUNTAINS.

**Possible Deposit Types:** Tungsten skarn, lead-zinc skarns, porphyry molybdenum and (or) copper, polymetallic veins, polymetallic replacement, copper skarn.

**Permissive Host Lithology:** Intrusive rocks and carbonates of the Triassic Luning Formation.

**Associated Volcanic/Intrusive Rocks:** Late Cretaceous porphyritic granodiorite stocks (16f).

**Alteration:** Local sericitized zones in granitic rocks and extensive skarn formation in carbonates.

**Geochemical Anomalies:** This area was sampled for stream sediments at a much higher density than most of the rest of the quadrangle.

-Over 90 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 24/W, 5/Ag, 3/Mo, 4/Zn, 35/Cu, 30/Pb.

**Known Mineral Occurrences:** Includes tungsten and base-metal skarns with some copper occurrences. Some of the tungsten skarns contain Mo (table 2). Specifically:

-Gunmetal Mine is a Union Carbide tungsten skarn deposit with visible Mo.

-Cu (W) in skarns in the vicinity of the Copper Chief and Clay Peters mines.

-Disseminated Cu-Mo at Pilot Group.

**Additional Favorable Geologic Features:** Area is partly underlain by a pronounced magnetic anomaly.

**Discussion:** Known mineralization has little Pb or Zn.

**Reference:**

Grabher, 1984; Kleinhampl and Ziony, 1984; Nash and others, 1985d.

## TRACT FI3A: SOUTHERN CEDAR MOUNTAIN.

**Possible Deposit Types:** Porphyry molybdenum and (or) copper, tungsten and lead-zinc skarns, polymetallic veins, and polymetallic replacement.

**Permissive Host Lithology:** Paleozoic-Mesozoic sedimentary rocks and Cretaceous granitic rocks.

**Associated Volcanic/Intrusive Rocks:** Cretaceous granitic rock.

**Geochemical Anomalies:** Seven basins were sampled; stream sediment samples yielded no anomalous results.

**Known Mineral Occurrences:**
-Veins with Cu and Au are reported at, or near, the Outlaw Prospect.

**Additional Favorable Geologic Features:** Aeromagnetic data suggest a buried pluton in the western part of this tract.

**Reference:**
Albers and Stewart, 1972.

## TRACT FI3B: ROCK HILL.

**Possible Deposit Types:** Porphyry molybdenum, tungsten skarn.

**Permissive Host Lithology:** Mesozoic and Paleozoic sedimentary rocks (largely Palmetto Formation), felsic porphyry.

**Associated Volcanic/Intrusive Rocks:** Granite porphyry with late (hydrothermal?) sericite.

**Alteration:** Locally intense areas of silicification and quartz stockwork veins.

**Geochemical Anomalies:** One basin was sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 1/Ag, 1/Mo, 1/Cu, 1/Pb.

**Known Mineral Occurrences:**
-Tungsten skarn at the Broken Toe and Rock Hill Mines.
-At the Rock Hill Mine, stockwork quartz with Au, Ag, Mo, W(?) is reported.
-Placer scheelite workings occur along the highway.

**Reference:**
Albers and Stewart, 1972.

## TRACT FI4: LONE MOUNTAIN.

**Possible Deposit Types:** Polymetallic veins, polymetallic replacement, porphyry molybdenum (?), tungsten skarn.

**Permissive Host Lithology:** Reed dolomite, Wyman Formation shale.

**Associated Volcanic/Intrusive Rocks:** Felsic intrusions of Cretaceous and Tertiary ages.
-Lone Mountain pluton is a late Cretaceous (probably 70 Ma) peraluminous biotite granite to two-mica garnet granite, appears to be "deep", and shows a gneissic fabric.
-Silicic porphyry dikes of probable Tertiary age are found northeast of the Lone Mountain pluton.

**Alteration:** Tertiary dikes are sericitized or argillized.
-The Reed Dolomite has been recrystallized.

-Minor gossans can be found around the Alpine Mine.

**Geochemical Anomalies:** 13 basins have been sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 10/W, 1/Zn, 1/Cu, 2/Pb.

**Known Mineral Occurrences:** Precious and base-metal vein deposits. Specifically:

-Alpine Mine has Ag-Pb-Zn replacement mineralization in Precambrian dolomite that has been reported in the literature as replacement mineralization. D.A. John (oral commun., 1985) believes the mineralization is related to Tertiary silicic dikes similar to those at the Heidi Mine.

-Miocene quartz porphyry dikes on the northeast side of the pluton contain Ag, Au, and base-metals; some are very rich.

-Occurrences of molybdenite have been reported southeast of Lone Mountain.

-In the Lone Mountain District, there has been major Pb and Zn production, although largely from mines south of the quadrangle, and additional production of Au-Ag-base metals from the contact aureole.

**Reference:**

Albers and Stewart, 1972; Bonham and Garside, 1979, 1982.

## TRACT FI5A,B: SOUTHERN TOQUIMA RANGE.

**Possible Deposit Types:** Polymetallic replacement, polymetallic veins, tungsten and lead-zinc skarns.

**Permissive Host Lithology:** Felsic intrusive bodies, carbonates, and other sedimentary rocks.

**Associated Volcanic/Intrusive Rocks:** Four intrusive bodies. Three of the bodies are found in the northern part of the tract and one pluton in the southern part. The southernmost pluton has a large alaskite phase. Two of the northern bodies and the southern body are large coarse grained, leucocratic biotite granites 80-85 Ma in age. The smaller intrusive body northeast of Round Mountain is Eocene (38 Ma).

**Alteration:** The main alteration in the tract consists of:

-Sericitic vein envelopes on quartz-pyrite-huebnerite veins.

-Local skarn formation along the margins of the intrusions.

-Scattered silicification and formation of jasperoids in the sedimentary rocks.

-Metasomatism associated with the Eocene stock.

**Geochemical Anomalies:** Abundant rock sampling has been done in this area by D.R. Shawe.

-43 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 15/W, 5/Ag, 1/Mo, 5/Zn, 2/Cu, 1/Pb.

**Known Mineral Occurrences:** Mineral occurrences are generally associated

with the intrusions. Specifically:

-Quartz-huebnerite veins are found throughout the tract associated with the Cretaceous plutonic rocks. In the north, the mineralization is largely along faults.

-In the northern part of the tract, Mo-bearing veins are present in the granitic rock and Mo-bearing skarns have been reported. Kerr-McGee explored the stockwork in the 1960's but later abandoned the project; evidently the mineralization did not form an economic deposit.

-Extensive Ag-base-metal veins in the Barcelona and Belmont areas.

**Discussion:** D.R. Shawe reports Mo associated with the Tertiary Au mineralization.

**References:**

Kleinhampl and Ziony, 1984; Nash and others, 1985a; Shawe, 1977a, 1977b, 1982.

## TRACT FI6: NORTHERN TOQUIMA RANGE.

**Possible Deposit Types:** Polymetallic replacement, porphyry molybdenum and (or) copper, polymetallic veins.

**Permissive Host Lithology:** Felsic intrusions and adjacent rocks.

**Associated Volcanic/Intrusive Rocks:** Tonalite to granodiorite and quartz porphyry stocks. The tonalite-granodiorite in the north is Jurassic.

**Alteration:** The quartz porphyry is strongly sericitized while the northern body is propylitized.

**Geochemical Anomalies:** 24 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 7/Ag, 7/Mo, 10/Zn, 11/Cu.

**Known Mineral Occurrences:** The northern stock has weak skarn mineralization on the west side as well as quartz veins on the south side that contain Ag in tetrahedrite and galena (Iron Rail group?, table 5).

**Reference:**

Kleinhampl and Ziony, 1984; McKee, 1976.

## TRACT FI7A,B: TOIYABE RANGE.

**Possible Deposit Types:** Tungsten skarn, polymetallic veins, porphyry molybdenum, polymetallic replacement.

**Permissive Host Lithology:** Felsic to intermediate intrusions and sedimentary wall rocks. Within this tract, the wall rocks consist of the Darrough Felsite, early Paleozoic sedimentary rocks, and late Paleozoic volcanic and volcaniclastic rocks.

**Associated Volcanic/Intrusive Rocks:**

-At 7f the Timblin Creek composite body is composed of two or three phases which are largely biotite granodiorite but an older tonalite phase is present. Generally, this intrusion looks too deep for porphyry-type deposits and the skarns are probably roof pendent rocks.

-The Cretaceous Ophir Pluton (8f) is a composite intrusion composed of at least four phases of two distinct ages. The main phase is a gneissic biotite granite that is about 100 Ma.

-At 9f is quartz-monzonite porphyry dike.

**Alteration:** The intrusive body at 9F(18) is weakly bleached and one of the phases of the Timblin Creek composite body is strongly altered with a quartz-sericite-pyrite stockwork veins.

**Geochemical Anomalies:** 75 basins were sampled; stream sediment samples yielded the following results (no. of basins/element): 15/W, 3/Ag, 1/Mo, 13/Zn, 20/Cu, 7/Pb.

**Known Mineral Occurrences:** Known mineralization includes tungsten skarns and polymetallic veins. Specifically:

-W-bearing garnet skarns and quartz-muscovite-pyrite veins are associated with the Timblin Creek intrusions.

-The Ophir pluton has local tungsten skarns.

-In the southern area (FI17B), polymetallic veins cut granite, porphyry dikes, and wallrocks. The mineralization appears to be related to the granitic porphyry dikes.

-Mo is reported in quartz veins at the Superior Molybdenum Prospect.

**Discussion:** The relationship of the gold mineralization at Ophir to the pluton is unknown.

**Reference:**

Kleinhampl and Ziony, 1984.

## TRACT FI8: EXTREME SOUTHERN TOIYABE RANGE.

**Possible Deposit Types:** Polymetallic veins, copper or lead-zinc skarn, polymetallic replacement, porphyry molybdenum and (or) copper.

**Permissive Host Lithology:** Paleozoic and Mesozoic carbonate rocks and felsic to mafic intrusions.

**Associated Volcanic/Intrusive Rocks:** Diorite.

**Geochemical Anomalies:** Three basins were sampled; stream sediment samples yielded only one anomalous result; one basin was anomalous in Pb.

**Known Mineral Occurrences:**

-Minor Cu mineralization, largely along fault zones to north (Green Lizard Group).

-Red argillite was prospected in 1960's, but commodity is not known.

**Additional Favorable Geologic Features:** This area is underlain by a

strong aeromagnetic high; the basaltic rocks in the area may contribute to the high.

## TRACT FI9: ROYSTON HILLS-CEDAR MOUNTAIN.

**Possible Deposit Types:** Polymetallic veins, porphyry molybdenum and (or) copper, polymetallic replacement, tungsten skarn, copper skarn, iron skarn, lead-zinc skarn.

**Permissive Host Lithology:** Felsic intrusions and adjacent Paleozoic and Mesozoic sedimentary rocks.

**Associated Volcanic/Intrusive Rocks:**

-dikes.

-A porphyritic hornblende granodiorite or quartz monzodiorite at 12 that is earliest Jurassic (about 206 Ma).

-A weathered biotite granodiorite reported near 13f.

-The north body at 10f is a composite pluton with abundant aplite and alaskite. The south body at 10f is a two-phase biotite hornblende granodiorite porphyry. The central body is a fine grained biotite granodiorite.

-At 11f is an unmineralized, largely unaltered, diorite-tonalite.

**Alteration:** Scattered argillic, silicic and propylitic alteration.

-Near 13f, there is argillic alteration and silicification.

-Weak propylitic alteration of the tonalite and granodiorite in the eastern part of the tract.

**Geochemical Anomalies:** 37 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 5/W, 6/Ag, 2/Mo, 2/Zn, 1/Cu, 3/Pb.

**Known Mineral Occurrences:** Includes polymetallic veins, skarns, and polymetallic replacement.

-At Crow Springs (12f), polymetallic veins occur in a granitic body.

-The altered area around near 13f is anomalous in Ag, As, Bi, Cu, Zn, and Mo.

-In 1963, Homestake Mining Co. drilled several holes on the Huntley-Daniel Property in altered granitic rocks and adjacent welded tuff for porphyry copper, but with negative results (sec. 36, T. 5 N., R. 39 E.). The site has Cu, Mo, and turquoise.

-The north body at 10f has minor copper-iron skarns associated with its most mafic phase.

-The south body at 10f has tungsten skarn and Ag-As-Sb-Au veins in adjacent carbonate rock.

-The Orizaba Mine is in the contact zone of the intrusion at 11f. The mineralization is described as Ag-Pb-Zn replacement. Very minor Sn has also been reported.

-The mines of the Simon or Bell District form a deposit that is included in the polymetallic replacment grade-tonnage model, but the mineralization is probably Tertiary and unrelated to granitoids.

-Anaconda drilled at Royston for porphyry copper mineralization in the late 1970's.

**References:**
Albers and Stewart, 1972; Kleinhampl and Ziony, 1984.

## TRACT FI10: SHOSHONE RANGE.

**Possible Deposit Types:** Polymetallic veins, lead-zinc skarns, tungsten skarn, polymetallic replacement, porphyry molybdenum (?).

**Permissive Host Lithology:** Paleozoic-Mesozoic carbonates and other sedimentary rocks (largely metamorphosed to greenschist facies).

**Associated Volcanic/Intrusive Rocks:** Monzonite porphyry, quartz diorite.

**Alteration:** Weakly argillized monzonite, but intruded rocks are not altered adjacent to the intrusion. The quartz diorite is propylitized. The sedimentary rocks are locally silicified.

**Geochemical Anomalies:** 37 basins were sampled for stream sediment with the following anomalous results (no. of basins/element): 3/W, 2/Ag, 1/Mo, 5/Zn, 6/Cu, 4/Pb.

**Known Mineral Occurrences:**
-Small lead-zinc skarns.
-Very small tungsten skarn at Grantsville.
-Cu-rich veins at the Copper King Group and the Reward Mine.
-Pb-Zn-Cu veins at the Berlin Mine and the Good Luck Group.

**References:**

Kleinhampl and Ziony, 1984; Silberling, 1959.

## TRACT FI11: MONTE CRISTO RANGE.

**Possible Deposit Types:** Porphyry molybdenum and (or) copper, tungsten skarn, polymetallic vein, polymetallic replacement.

**Permissive Host Lithology:** Paleozoic sedimentary rocks.

**Associated Volcanic/Intrusive Rocks:** Rhyolite, diorite(?) intrusion.

**Alteration:** Granite on the dump of the Carrie Mine (table 5) is highly sericitized.

**Geochemical Anomalies:** This area was sampled for stream sediments at a much higher density than most of the rest of the quadrangle.
-At least 85 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 6/W, 14/Ag, 7/Mo, 10/Zn, 31/Cu, 35/Pb.

**Known Mineral Occurrences:** There are two ages of mineralization in the Gilbert District.

-At the Carrie Mine, base-metal mineralization occurs in carbonate rock. Granitic rock is present on the dump although it does not crop out in the vicinity of the mine.
-Turquoise deposits.
-Pb-Cu-Au-Ag veins at Nemo Mine.
-Cu, Turquoise, and Au at the Pretty Boy Claims.
-Cu and Au in breccia at Sample Site 1276 (table 5).

**Additional Favorable Geologic Features:** Gravity data suggest that the Paleozoic sedimentary rocks might underlie the entire south-central part of the range.

**Reference:**
Albers and Stewart, 1972; Nash and others, 1985b.

## TRACT FI12: NORTHERN MONITOR RANGE.

**Possible Deposit Types:** Polymetallic vein, polymetallic replacement, lead-zinc skarn(?).

**Permissive Host Lithology:** Paleozoic sedimentary rocks.

**Associated Volcanic/Intrusive Rocks:** Rhyolite, Mesozoic granitic intrusion.

**Alteration:** Silicification at 10e and 12e (see plate 1).

**Geochemical Anomalies:** 35 basins were sampled; stream sediment samples yielded the following results (no. of basins/element): 2/Ag, 1/Mo, 2/Zn, 1/Cu, 5/Pb.

**Known Mineral Occurrences:** None.

## TRACT FI13: SOUTHERN HOT CREEK RANGE.

**Possible Deposit Types:** Polymetallic vein, polymetallic replacement.

**Permissive Host Lithology:** Paleozoic carbonates and other sedimentary rocks.

**Associated Volcanic/Intrusive Rocks:** Rhyolite.

**Geochemical Anomalies:** 38 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 4/Ag, 1/Zn, 2/Pb.

**Known Mineral Occurrences:**
-Tybo polymetallic vein deposit.
-Turquoise deposits occur near Warm Springs.
-Pb-Ag-(Zn)-(Cu) veins are known at the Swarbick Property, New Hope Claims, Ophir and Dexter Mine, Lead King Claim, Keystone Mine, Bresnahan Prospect, Bunker Hill Mine, Cunningham Mine, and Dimick and Gilmore Mines.

-Ernst and Brown Property has Au-Cu veins.

**Reference:**
Kleinhampl and Ziony, 1984.

## TRACT FI14: MOREY PEAK AREA (NORTHERN HOT CREEK RANGE).

**Possible Deposit Types:** Polymetallic vein, polymetallic replacement, porphyry molybdenum (?).

**Permissive Host Lithology:** Paleozoic sedimentary rocks.

**Associated Volcanic/Intrusive Rocks:** Rhyolite and andesite dikes.

**Permissive Structure:** Multiple caldera structures.

**Geochemical Anomalies:** 39 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 2/Mo, 4/Zn, 1/Cu, 2/Pb.
-92 basins were sampled for the Morey/Fandango wilderness studies and the reader should consult Saunders and others (1986) or John and others (1986) for additional information.

**Known Mineral Occurrences:**
-Base-metal veins are found in Tertiary rocks but are rare in pre-Tertiary rock.
-Pb-Ag at the Good Luck Group.
-Pb at the Lead Pipe Property.
-NBMG Sample Site 457 (table 5) reports Pb-Zn-Ag as replacement mineralization in pre-Tertiary rock.
-Pb-Ag-Mo veins are reported at Point of Rocks and Topside Prospect.
-Pb-Ag-Mn-Mo at Wist Workings.

**Reference:**
John and others, 1986; Kleinhampl and Ziony, 1984; McDonnell, 1985; Saunders and others, 1986.

## TRACT FI15: REVEILLE RANGE.

**Possible Deposit Types:** Polymetallic vein, polymetallic replacement.

**Permissive Host Lithology:** Paleozoic carbonate rocks.

**Associated Volcanic/Intrusive Rocks:** Rhyolite.

**Permissive Structure:** Extensive faulting.

**Alteration:** Silicification, minor argillization.

**Geochemical Anomalies:** 14 basins were sampled; stream sediment samples yielded the following anomalous results (no. of basins/element): 1/Ag, 2/Pb.

**Known Mineral Occurrences:**
-Cu veins are reported at several sites.
-Pb-Ag ore at many of the mines, but this is probably sediment-hosted disseminated silver mineralization.

**References:**
Jones, 1985; Kleinhampl and Ziony, 1984.

## TRACT FI16: ELLENDALE DISTRICT AND VICINITY (BLACK BUTTE).

**Possible Deposit Types:** Polymetallic vein, lead-zinc and copper skarns, porphyry molybdenum (?).

**Permissive Host Lithology:** Paleozoic sedimentary rocks.

**Associated Volcanic/Intrusive Rocks:** Small Tertiary quartz diorite intrusions.

**Alteration:** Extensive argillic alteration, local silicification.

**Geochemical Anomalies:** Five basins were sampled; stream sediment samples yielded no anomalous results.

**Known Mineral Occurrences:** Ellendale District.
-Sb-Cu was found at the APK-1, APR Drill Holes (table 5).
-Zn at Dob No. 7 (table 5).
-Lead-zinc-copper skarn at Unnamed Prospect A (table 5).
-Ag-Zn-Pb veins at the Vestal Claim and Danville Mine.

**Additional Favorable Geologic Features:** Two aeromagnetic anomalies indicate possible buried plutons. Gravity data suggest some extension of Paleozoic sedimentary rocks under Tertiary volcanic rocks.

## TRACT FI17: ANTELOPE-PARK RANGE.

**Possible Deposit Types:** Porphyry molybdenum(?), polymetallic veins(?).

**Permissive Host Lithology:** Paleozoic sedimentary rocks.

**Associated Volcanic/Intrusive Rocks:** Possible buried pluton is indicated by aeromagnetic data.

**Alteration:** Minor silicification, generally restricted to tuffs.

**Geochemical Anomalies:** There is abundant Mo in the southwest of this tract. The one basin sampled for stream sediments yielded no anomalous results.

**Known Mineral Occurrences:** None.

**Additional Favorable Geologic Features:** Gravity data indicate extension of Paleozoic sedimentary rocks under the Tertiary volcanic rocks.

**Reference:**
Johnson and Benjamin, 1986a, 1986b.

## TRACT FI18: SQUAW HILLS.

**Possible Deposit Types:** Polymetallic veins, polymetallic replacement.

**Permissive Host Lithology:** Paleozoic sedimentary rocks limestone and quartzite (?), Tertiary sedimentary rocks.

**Associated Volcanic/Intrusive Rocks:** Rhyolite.

**Alteration:** There is widespread argillic alteration in the southern (?) part if the tract.

**Geochemical Anomalies:** Six basins were sampled with no anomalous results.

**Known Mineral Occurrences:** None.

## TRACT FI19: MONITOR RANGE.
Region: Monitor Range

**Possible Deposit Types:** Polymetallic veins

**Permissive Host Lithology:** Tertiary volcanic rocks.

**Associated Volcanic/Intrusive Rocks:** Pronounced magnetic and gravity highs indicate possible pluton. Big Ten Peak Rhyolite.

**Alteration:** Local silicic, sericitic. Argillitic in the north part of the tract.

**Geochemical Anomalies:** Three basins were sampled with no anomalous results.

**Known Mineral Occurrences:** Base- and precious-metal veins of the Longstreet District.

**Recent Exploration/Development:** A Mesozoic granite megabreccia block was drilled as a porphyry molybdenum prospect (drilled through block into unaltered ash-flow tuff).

**Additional Favorable Geologic Features:** Many of the large carbonate breccia blocks in the tuff are mineralized.

**References:**
Kleinhampl and Ziony, 1984.

TABLE 1. Deposit types of the Tonopah 1° by 2° quadrangle, Nevada.

| Deposit Type | Major Known Deposit(s) in Study Area |
|---|---|
| Bedded barite | Northumberland Barite<br>Jumbo Mine<br>and others |
| Copper skarn | Copper Chief |
| Epithermal gold-silver veins | Ellendale District<br>Clifford Mine<br>Tonopah and Divide Districts<br>Jefferson District<br>Omco and Warrior Mines<br>and many others |
| Hot-spring gold-silver | Round Mountain<br>Paradise Peak (FMC) |
| Iron skarn | Phelps Stokes Mine |
| Lead-zinc skarn | None |
| Polymetallic replacement | Simon Mine (Bell subdistrict) |
| Polymetallic vein | Tybo |
| Porphyry copper | None |
| Porphyry molybdenum (low fluorine) | Hall (Nevada Moly) Mine<br>UV Industries (B and C Springs) |
| Sediment-hosted disseminated gold-silver | Manhattan District<br>Northumberland Mine<br>Reveille District |
| Simple antimony | King Solomon Mine<br>Eaton Mine<br>Page Mine<br>and others |
| Tungsten skarn | Victory Tungsten Mine (endoskarn)<br>Gunmetal Mine (exoskarn) |
| Turquoise | Royal Blue<br>Monte Cristo<br>many others |

Table 2. Deposit grade and tonnage for tungsten skarn deposits (data from Menzie and Jones, 1986).

| Variable | No. of Deposits | Percent of Deposits That Equal or Exceed Given Grade or Tonnage 90% | 50% | 10% |
|---|---|---|---|---|
| Tonnes x $10^6$ | 28 | 0.05 | 1.1 | 22 |
| Grade $WO_3$ (percent) | 28 | 0.34 | 0.67 | 1.4 |

Table 3. Occurrences of tungsten (as scheelite) and molybdenum in the Tonopah quadrangle.

| MRDS REC NO | NAME | LAT | LONG | COMMODITIES | | | | | | | | DEPOSIT TYPE | TRACTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M030040 | BARCELONA MINE | 38-37-00N | 116-53-00W | AU | AG | CU | MO | PB | W | | | VEIN; DISSEMINATED | F1-5b |
| M231576 | BAXTER MINE | 38-47-21N | 117-49-40W | W | | | | | | | | SKARN | F1-1 |
| M233476 | BELMONT BIG FOUR MINE | 38-36-00N | 117-00- W | MO | AG | CU | | | | | | VEIN/TABULAR | E-11 |
| D011045 | BIG DIPPER PROSPECT | 38-53- N | 117-51- W | W | | | | | | | | UNKNOWN | F1-1 |
| M232164 | BLUE BIRD PROSPECT | 38-31-31N | 117-48-05W | W | | | | | | | | SKARN | F1-9 |
| D011073 | BROKEN ARM | 38-57-30N | 117-14-30W | W | | | | | | | | | F1-7a |
| | BROKEN TOE MINE | 38-09-31N | 117-57-43W | W? | F? | | | | | | | CONTACT METAMORPHIC | |
| M231796 | BUCKEYE MINE (NEW MOOSE PROPERTY) | 38-59-06N | 117-15-31W | AU | BA | PB | ZN | AG | W | | | POLYMETALLIC VEIN, SKARN | |
| M231812 | CACTUS PROSPECT | 38-59-13N | 117-13-30W | W | BE | | | | | | | CONTACT METAMORPHIC | F1-7a |
| M241863 | CARRIE MINE | 38-09-50N | 117-40-25W | GEM | AG | PB | SB | ZN | CU | MO | W | VEIN/LODE | |
| M232165 | CEDAR CHEST CLAIMS | 38-31-30N | 117-48-18W | W | | | | | | | | SKARN | F1-9 |
| D011036 | CEDAR SUMMIT MINE | 38-20- N | 117-47- W | W | | | | | | | | TACTITE | |
| D011067 | COMMODORE MINE | 38-57-45N | 117-46- W | W | AG | | | | | | | UNKNOWN | F1-1 |
| M232174 | COPPER CHIEF MINE | 38-28-21N | 117-59-01W | CU | W | | | | | | | SKARN | |
| M233036 | DESERT SCHEELITE CLAIMS | 38-22-45N | 117-52-12W | W | | | | | | | | SKARN | F1-1 |
| | DRILL SITE | 38-25-52N | 116-54-52W | MO | | | | | | | | DISSEMINATED | NEAR F1-19 |
| M231641 | EL CAPITAN MINE | 38-57-14N | 117-53-35W | W | | | | | | | | SKARN | F1-1 |
| D011048 | EMMA PROSPECT | 38-56-30N | 117-53- W | W | | | | | | | | UNKNOWN | F1-1 |
| M241818 | FLORA PROSPECT | 38-09-40N | 117-57-19W | F | CU | MO | | | | | | VEIN/LODE | |
| M231595 | GABBS VALLEY CLAIMS | 38-50-17N | 117-55-26W | W | | | | | | | | SKARN, VEIN | F1-1 |
| M232176 | GUNMETAL MINE, GARNET MINE | 38-23-35N | 117-53-14W | W | ZN | MO | CU | | | | | SKARN | F1-1 |
| M231757 | HALL PROPERTY - NEVADA MOLY PROJECT | 38-19-09N | 117-17-40W | MO | CU | AG | | | | | | PORPHYRY MOLYBDENUM (LOW-FLUORINE), STOCKWORK | F1-12a |
| M233578 | HIATT PROSPECT | 38-30-00N | 117-05-34W | BE | F | W | V | | | | | VEIN-LIKE/GREISEN | E11,F1-5a |
| | HUGHES TOOL COMPANY DRILL SITE | 38-26-42N | 117-34-44W | W | | | | | | | | UNKNOWN | F1-9 |
| M242296 | HUNTLEY-DANIEL PROP., HOMESTAKE PROSPECT | 38-14-28N | 117-33-05W | CU | GEM | MO | | | | | | PORPHYRY | F1-9 |
| M233221 | JASPER GROUP | 38-30-55N | 117-59-41W | W | CU | | | | | | | SKARN | F1-1 |
| D011066 | JETT CANYON (NICELY) PROSPECT | 38-44- N | 117-13-30W | W | | | | | | | | | F1-7b |
| M030041 | NEW YEAR GROUP (REEVES TUNNEL) | 38-57-00N | 117-16-00W | W | MO | MN | | | | | | SKARN? | F1-7a |
| M231736 | OUTLAW PROSPECT | 38-38-46N | 117-00-27W | CU | MO | | | | | | | VEIN | F1-5b |
| M231509 | PERKINS PROSPECT | 38-39-00N | 116-57-47W | AG | MO | CU | PB | ZN | F | | | VEIN, TACTITE | F1-5b |
| M233052 | PILOT GROUP (TIFFANY MINE) | 38-20-02N | 117-51-58W | CU | MO | | | | | | | VEIN, DISSEMINATED | F1-3 |
| M030116 | PILOT MOUNTAINS | 38-23-11N | 117-53-22W | W | MO | | | | | | | SKARN | F1-3 |
| M231709 | POINT OF ROCKS | 38-40-05N | 116-16-12W | PB | AG | MO | | | | | | VEIN/SHEAR ZONE | F1-14 |
| M030044 | PROSPECT HOLE | 38-25-59N | 116-55-22W | MO | | | | | | | | CONTACT METAMORPHIC | NEAR F1-19 |
| M241819 | ROCK HILL TUNGSTEN MINE AND MILL | 38-09-23N | 117-57-08W | W | AU | AG | MO? | | | | | PLACER, VEIN, STOCKWORK, SKARN? | |
| M055310 | SCHEEBAR MINE | 38-48-46N | 117-49-00W | HG | W | F | | | | | | | F1-1 |
| D011046 | SCRATCH PROSPECT | 38-52- N | 117-54- W | W | | | | | | | | UNKNOWN | F1-1 |
| M233557 | SUPERIOR MOLYBDENUM PROSPECT | 38-42-39N | 117-14-50W | MO | | | | | | | | VEIN | F1-7b |
| D011050 | TEN O'CLOCK HOPE MINE | 38-55-30N | 117-52- W | W | | | | | | | | UNKNOWN | F1-1 |
| M231698 | THELMA MINE | 38-32-12N | 117-02-45W | AG | F | MO | | | | | | REPLACEMENT | F5a |
| M231712 | TOPSIDE PROSPECT | 38-39-58N | 116-16-43W | PB | AG | MO | | | | | | VEIN/SHEAR ZONE | F1-14 |
| M233179 | UNIDENTIFIED OCCURRENCES | 38-30-32N | 117-45-58W | W | | | | | | | | TACTITE | F1-9 |
| M233648 | UNKNOWN TUNGSTUN PROSPECT | 38-58-54N | 117-13-29W | W | | | | | | | | SKARN | F1-7a |
| M231646 | UNNAMED PROSPECT | 38-59-05N | 117-56-05W | W | CU | | | | | | | SKARN | F1-1 |
| | UNNAMED SHAFT | 38-29-03N | 117-04-30W | W? | | | | | | | | UNKNOWN | |
| M231589 | UV INDUSTRIES PROPERTY | 38-47-38N | 117-51-32W | MO | AG | CU | W | | | | | PORPHRY MOLYBDENUM (LOW-FLUORINE) | F1-1 |
| M055002 | VAN NESS MINE | 38-38-39N | 116-58-41W | HG | W | | | | | | | VEIN; CONTACT | F1-5b |
| M233474 | VELVET GROUP | 38-43-15N | 116-55-20W | W | | | | | | | | UNKNOWN | E12 |
| M231647 | VICTORY TUNGSTEN MINE (KAY COOPER GROUP) | 38-58-32N | 117-54-53W | W | F | MO | BE | | | | | SKARN | F1-1 |
| M231514 | WARREN PROSPECT | 38-39-07N | 116-57-19W | MO | W | | | | | | | SKARN | F1-5b |
| | WEE POM CLAIMS | 38-09-05N | 117-11-37W | W | | | | | | | | SKARN | F1-12b |
| D011047 | WHITE DIAMOND MINE | 38-46-30N | 117-50- W | AU | AG | W | | | | | | UNKNOWN | F1-1 |
| M233483 | ZABRISKIE TUNGSTEN PROSPECT | 38-33-03N | 116-52-12W | W | | | | | | | | | F1-5b |

Table 4. Deposit grade and tonnage model for porphyry copper deposits (data from Singer and others, 1986).

| Variable | No. of Deposits | Percent of Deposits That Equal or Exceed Given Grade or Tonnage 90% | 50% | 10% |
|---|---|---|---|---|
| Tonnes x $10^6$ | 208 | 19 | 140 | 1100 |
| Grade | 208 | | | |
| Cu (%) | | 0.31 | 0.54 | 0.94 |
| Au (gm/tonne) | * | | | 2.6 |
| Ag (gm/tonne) | * | | | 0.4 |
| Mo (percent) | * | | | 0.03 |

*Au, Ag, and Mo were not reported for all deposits.

Table 5. Copper, lead, and zinc occurrences in the Tonopah quadrangle.

| MRDS REC NO | NAME | LAT | LONG | COMMODITIES | | | | | | | | DEPOSIT TYPE | TRACTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M232095 | ALPINE MINE | 38-01-58N | 117-33-36W | PB | AG | | | | | | | CONTACT METASOMATIC | Fl-4 |
| M231615 | ANTIMONY LODE PROPERTY | 38-42-56N | 116-59-31W | SB | PB | AS | | | | | | VEIN | E-12,Fl-5b |
| | APK-1, APR-1 DRILL HOLES (NO. C1852) | 38-35-05N | 116-38-14W | SB | CU | | | | | | | | Fl-16 |
| M030040 | BARCELONA MINE | 38-37-00N | 116-53-00W | AU | AG | CU | MO | FE | W | | | VEIN; DISSEMINATED | |
| M055315 | BELLEVILLE MINE | 38-20-18N | 117-59-47W | AU | HG | ZN | | | | | | VEIN; TAILINGS | |
| M233476 | BELMONT BIG FOUR MINE | 38-36-00N | 117-00- W | MO | AG | CU | | | | | | VEIN/TABULAR | E-11 |
| M231836 | BERLIN MINE | 38-52-54N | 117-36-21W | CU | PB | ZN | AU | SB | AG | | | VEIN | Fl-10 |
| M233659 | BRESNAHAN PROSPECT | 38-22-30N | 116-23-18W | AG | PB | ZN | | | | | | VEIN/FAULT ZONE | Fl-13 |
| | BRIAN PIT | 38-01-07N | 116-11-18W | CU | | | | | | | | VEIN | Fl-15 |
| M231796 | BUCKEYE MINE (NEW MOOSE PROPERTY) | 38-59-06N | 117-15-31W | AU | BA | PB | ZN | AG | W | | | VEIN; CONTACT METAMORPHIC | E-7,Fl-7a |
| M231818 | BUNKER HILL MINE | 38-22-18N | 116-24-30W | PB | AG | AU | | | | | | LODE | Fl-13 |
| M241863 | CARRIE MINE | 38-09-50N | 117-40-25W | TUR | AG | PB | SB | ZN | CU | MO | W | VEIN/LODE | Fl-11 |
| M231592 | CHESTNUT MINE | 38-52-44N | 117-49-02W | AG | FE | | | | | | | VEIN (?) | |
| M232173 | CLAY PETERS MINE (KOPE SCHEELITE MINE) | 38-29-04N | 117-56-31W | AU | PB | CU | W | AG | | | | CONTACT METASOMATIC | |
| M231593 | COPPER BLOSSOM GROUP | 38-51-23N | 117-52-06W | CU | AG | | | | | | | UNKNOWN | Fl-1 |
| M232174 | COPPER CHIEF MINE | 38-28-21N | 117-59-01W | CU | W | | | | | | | CONTACT METASOMATIC | |
| M231838 | COPPER KING GROUP | 38-55-01N | 117-34-59W | CU | AG | AU | | | | | | VEIN | Fl-10 |
| M231819 | COPPER PROSPECT | 38-17-27N | 116-24-59W | AG | CU | PB | ZN | MO | SB | CD | | PODS | Fl-13 |
| M241841 | COPPER QUEEN CLAIM GROUP | 38-14-10N | 117-32-24W | CU | PB | AG | U | | | | | VEIN | Fl-9 |
| M233552 | CT. LAWRENCE PROPERTY | 38-45-01N | 117-15-53W | AG | PB | ZN | AU | | | | | VEIN | Fl-7b |
| M231820 | CUNNINGHAM MINE | 38-22-14N | 116-25-06W | AG | PB | ZN | | | | | | VEIN | Fl-13 |
| | DALLIMORE-DOUGLAS CLAIMS | 38-56-13N | 117-17-53W | AG | PB | CU | | | | | | | Fl-7a |
| M233502 | DANVILLE MINE (ARGONAUT CLAIM) | 38-46-23N | 116-31-56W | PB | ZN | AG | | | | | | BRECCIA ZONE/VEIN | Fl-16 |
| M231821 | DIMICK AND GILMORE MINES | 38-22-07N | 116-24-26W | PB | AG | AU | ZN | | | | | LODE; REPLACEMENT | Fl-13 |
| | DOB NO. 7 CLAIM | 38-58-08N | 116-30-06W | ZN | | | | | | | | | Fl-16 |
| M231622 | DOLLAR MINE | 38-38-23N | 117-14-06W | SB | CU | AG | | | | | | VEIN | E17,Fl-7b |
| M231594 | DOWNEYVILLE MINE | 38-54-45N | 117-54-02W | PB | AU | AG | MO | | | | | PIPES, GOSSAN | Fl-1 |
| M233037 | DREW MINE | 38-22-52N | 117-55-35W | HG | PB | AG | AU | | | | | REPLACEMENT | |
| | DRILL HOLES | 38-00-24N | 116-11-02W | CU | | | | | | | | UNKNOWN | Fl-15 |
| FS00157 | EAGLE NEST NOS. 5, 6 AND 7 | 38-48-00N | 116-30-00W | AG | PB | ZN | AU | | | | | VEIN/SHEAR ZONE | |
| M231525 | EL DORADO SOUTH MINE, HIGHBRIDGE MINE | 38-34-44N | 116-51-44W | AG | CU | PB | SB | AU | MO | | | VEIN | Fl-5b |
| M233660 | ERNST AND BROWN PROPERTY | 38-21-48N | 116-24-24W | AG | CU | | | | | | | VEIN | Fl-13 |
| M231568 | ESTA BUENA MINE | 38-58-07N | 117-45-18W | AG | SB | PB | | | | | | VEIN | |
| M231749 | FARRIS PROPERTY | 38-30-53N | 117-38-51W | AG | PB | | | | | | | VEIN | Fl-9 |
| M241818 | FLORA PROSPECT | 38-09-40N | 117-57-19W | F | CU | MO | | | | | | VEIN/LODE | |
| M231756 | FLORENCE MINE | 38-19-50N | 117-16-23W | AG | PB | CU | AU | ZN | | | | VEIN | Fl-12a |
| M232176 | GUNMETAL MINE, GARNET MINE | 38-23-35N | 117-53-14W | W | ZN | MO | CU | | | | | CONTACT METASOMATIC | |
| M233553 | GIBRALTER - SILVER HILL MINING CO. | 38-44-33N | 117-11-52W | AG | AU | PB | ZN | | | | | VEINS | |
| M231623 | GIBRALTER SILVER MINES CO. | 38-43-47N | 117-12-09W | AG | PB | ZN | AU | | | | | VEIN | Fl-7b |
| M231728 | GILA MINE | 38-02-05N | 116-10-59W | AG | CU | SB | PB | MO | AS | AU | ZN | VEIN/FAULT ZONE | Fl-15 |
| M231580 | GOLD LEDGE MINE | 38-47-14N | 117-58-03W | AU | CU | | | | | | | VEIN | |
| | GOOD HOPE MINE | 38-23-31N | 117-52-12W | CU | | | | | | | | UNKNOWN | Fl-1 |
| M233611 | GOOD LUCK GROUP | 38-39-57N | 116-15-17W | PB | AG | | | | | | | VEIN/SHEAR ZONE | Fl-14 |
| M231842 | GOOD LUCK MINE | 38-53-25N | 117-36-23W | CU | PB | ZN | SB | AU | | | | VEINS | Fl-10 |
| M241816 | GRAND VIEW | 38-58-22N | 117-44-31W | CU | AG | W | | | | | | QUARTZ VEINS | Fl-1 |
| M231843 | GRANTSVILLE MINE | 38-50-44N | 117-34-30W | AG | PB | ZN | CU | W | F | | | REPLACEMENT | Fl-10 |
| M231543 | GREEN LIZARD GROUP | 38-29-01N | 117-25-01W | CU | | | | | | | | SHEAR ZONES | Fl-8 |
| M231519 | GREEN SPRING ANOMALY | 38-53-57N | 117-49-49W | FE | | | | | | | | UNKNOWN-COVERED | |
| M030122 | GREEN TOP CLAIM | 38-43-00N | 117-02-00W | AG | CU | U | | | | | | VEIN | Fl-5b |
| M233657 | GROUNDHOG NO. 1 CLAIM | 38-57-04N | 117-19-07W | CU | AU | AG | BA | SB | MN | | | VEIN | Fl-7a |
| M231800 | GRUSS MINE | 38-56-29N | 117-18-39W | AG | PB | CU | | | | | | VEIN | Fl-7a |
| M231718 | HILL TOP GROUP | 38-55-40N | 116-59-10W | PB | AG | CU | | | | | | VEIN (?), STOCK | Fl-6 |
| M242296 | HUNTLEY-DANIEL PROP., HOMESTAKE PROSPECT | 38-14-28N | 117-33-05W | CU | TUR | MO | | | | | | PORPHYRY | Fl-9 |
| M231649 | ILLINOIS MINE - SMUGGLER CLAIM | 38-59-40N | 117-52-52W | PB | AG | AU | ZN | CU | U | MN | | VEIN | Fl-1 |
| M231544 | IRON RAIL GROUP | 38-42-31N | 117-34-25W | PB | ZN | CU | MN | AG | CD | SB | AS | BA FISSURE VEIN | E-6 |

Table 5 (cont.). Copper, lead, and zinc occurrences in the Tonopah quadrangle.

| MRDS REC NO | NAME | LAT | LONG | COMMODITIES | | | | | | | DEPOSIT TYPE | TRACTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M231581 | JIM GROUP | 38-43-39N | 117-52-44W | AU | PB | | | | | | VEIN | E-4 |
| | KEYSTONE MINE | 38-27-02N | 116-23-07W | PB | ZN | | | | | | UNKNOWN | F1-13 |
| M231729 | KIETZKE MINE | 38-01-34N | 116-11-55W | AG | CU | | | | | | VEIN/SHEAR ZONE | F1-15 |
| M231825 | LARSH/KER PROSPECT | 38-22-21N | 116-23-27W | AG | MN | PB | | | | | REPLACEMENT; VEIN | F1-11 |
| M231670 | LAST CHANCE GROUP | 38-22-58N | 116-55-25W | PB | AG | ZN | AU | | | | GOSSAN | F1-19a |
| M233661 | LEAD KING CLAIM | 38-19-16N | 116-24-43W | PB | AG | | | | | | FAULT CONTACT | F1-11 |
| M231613 | LEAD PIPE PROPERTY | 38-41-07N | 116-18-25W | PB | | | | | | | BEDDING PLANE | F1-14 |
| M231758 | LIBERTY MINE | 38-18-23N | 117-17-40W | CU | | | | | | | VEIN/SHEAR ZONE | F1-12a |
| M231572 | LIME DYKE, GERMANY, JAPAN CLAIMS | 38-58-32N | 117-49-16W | AG | PB | ZN | AU | | | | REPLACEMENT | F1-1 |
| M241837 | LLEWELLYN PROSPECT (?) | 38-16-20N | 117-34-48W | AG | PB | AU | | | | | VEIN | F1-9 |
| M231707 | MAGNOLIA VEIN | 38-40-10N | 116-15-29W | AG | AU | PB | SB | SN | AS | ZN | VEIN | F1-14 |
| M233506 | MARBLE CANYON PROSPECT | 38-58-59N | 117-48-04W | PB | AG | | | | | | VEIN | F1-1 |
| M233654 | MAYFLOWER/BIMETALLIC GROUPS | 38-53-36N | 117-15-20W | PB | AG | CU | ZN | | | | VEIN | F1-7a |
| M231584 | MILDRED MINE | 38-46-16N | 117-49-34W | CU | PB | | | | | | DISSEMINATED | F1-1 |
| M233554 | MILLETT PROPERTY IN PABLO CANYON | 38-42-22N | 117-12-56W | AG | PB | AU | | | | | FISSURE VEIN | F1-7b |
| M231845 | MILTON CANYON MINE | 38-48-55N | 117-34-31W | SB | CU | AG | SE | | | | VEIN/SHEAR ZONE | F1-10 |
| M231804 | MURPHY MINE/GRIZZLY CLAIM | 38-56-40N | 117-16-47W | AG | AU | CU | SB | PB | ZN | | VEIN, EPITHERMAL | |
| M241823 | NBMG SAMPLE SITE 1082 | 38-08-52N | 117-57-21W | CU | AG? | AU | | | | | VEIN | |
| M242272 | NBMG SAMPLE SITE 457 | 38-02-58N | 117-27-21W | PB | ZN | AG? | | | | | REPLACEMENT | F1-14,F1-4,E- |
| M231691 | NEMO MINE | 38-32-28N | 117-06-55W | PB | CU | AU | AG | | | | VEIN | F1-5a,F1-11 |
| M231832 | NEW HOPE CLAIMS | 38-21-47N | 116-23-01W | PB | AG | | | | | | VEIN | F1-13 |
| M231731 | NEW REVEILLE MINE | 38-00-16N | 116-11-17W | AG | PB | ZN | AU | | | | VEIN; REPLACEMENT | F1-15 |
| M231573 | NUT PINE PROSPECT | 38-57-36N | 117-47-57W | PB | AG | | | | | | REPLACEMENT | F1-1 |
| M231827 | OPHIR AND DEXTER MINE | 38-26-47N | 116-23-06W | AG | CU | PB | ZN | | | | | F1-13 |
| M231751 | OKIZABA MINE | 38-30-38N | 117-36-58W | AG | AU | PB | ZN | | | | VEIN | F1-9 |
| | OUTLAW CLAIMS | 38-21-07N | 117-39-19W | CU | | | | | | | VEIN | F1-3a |
| M231736 | OUTLAW PROSPECT | 38-38-46N | 117-00-27W | CU | MO | | | | | | VEIN | F1-5b |
| M231509 | PERKINS PROSPECT | 38-39-00N | 116-57-47W | AG | MO | CU | PB | ZN | F | | VEIN, TACTITE | |
| M231709 | POINT OF ROCKS | 38-40-05N | 116-16-12W | PB | AG | MO | | | | | VEIN/SHEAR ZONE | F1-14 |
| M241853 | PRETTY BOY CLAIMS | 38-06-45N | 117-42-47W | AU | CU | TUR | | | | | VEINS | F1-11 |
| M231616 | PRUSSIAN MINE | 38-42-51N | 116-58-59W | AG | SB | PB | ZN | CU | | | VEIN | E-12,F1-5b |
| M231618 | PRUSSIAN SOUTH MINE | 38-42-37N | 116-58-46W | AG | SB | PB | CU | ZN | | | VEIN | E12,F1-5B |
| M231831 | RESCUE PROSPECT | 38-21-36N | 116-22-48W | AS | FE | PB | | | | | REPLACEMENT | |
| M055005 | REWARD MINE | 38-21-48N | 117-57-55W | MG | CU | SB | | | | | DISSEMINATED, VEIN | |
| M231846 | RICHMOND MINE | 38-52-29N | 117-34-47W | PB | CU | SB | AG | AU | FE | | VEIN | F1-10 |
| M233620 | RIFLE CLAIMS | 38-10-48N | 116-53-38W | CU | TUR | AU | AG | | | | VEIN | E-15 |
| M231745 | ROYSTON COALITION MINE | 38-19-20N | 117-31-00W | PB | AG | CU | AU | TUR | | | VEIN | F1-9 |
| M231619 | SAILOR BOY MINE | 38-42-55N | 116-58-30W | CU | MN | | | | | | VEIN | F1-5b |
| M241851 | SAMPLE SITE 1276 | 38-12-03N | 117-42-21W | CU | AU | | | | | | BRECCIA/VEIN | F1-11 |
| M231511 | SAN PEDRO SHAFT | 38-38-55N | 116-57-33W | AG | MG | ZN | PB | | | | VEIN | |
| M233556 | SERGEANT PROPERTY | 38-43-47N | 117-13-28W | AG | AU | PB | ZN | | | | VEIN/FAULT ZONE | F1-7b |
| D001283 | SIERRA MAGNESITE MINE | 38-52- N | 117-53- W | AG | AU | PB | MN | | | | REPLACEMENT; VEIN | |
| M231650 | SILVER KING AND RESO | 38-59-40N | 117-53-33W | PB | ZN | AG | AU | | | | VEIN/SHEAR ZONE | F1-1 |
| M232171 | SIMON MINE | 38-33-50N | 117-51-42W | PB | AG | AS | ZN | | | | REPLACEMENT | F1-9 |
| M231558 | STANGO SPRING AREA | 38-57-05N | 116-29-15W | MN | AG | ZN | BA | BE | CO | NI | YT | VEIN; REPLACEMENT |
| M233633 | STEVENSON'S & SCHUPPY'S CLAIMS | 38-41-51N | 117-02-04W | W | AG | CU | | | | | VEINS | F1-5b,E-12 |
| M231808 | SUMMIT CREEK MINE | 38-58-48N | 117-16-44W | BA | CU | AG | | | | | REPLACEMENT LENS | F1-7a |
| | SWANBRICK PROSPECT | 38-21-38N | 116-23-25W | PB | ZN | AG | | | | | UNKNOWN | F1-11 |
| M231810 | TEICHART PROPERTY | 38-53-18N | 117-17-42W | SB | AG | PB | ZN | AU | SE | CU | VEIN | F1-7a |
| M233647 | TOM CAT CLAIMS | 38-52-49N | 117-13-58W | PB | AG | AU | | | | | VEIN/SHEAR ZONE | F1-7a |
| M231712 | TOPSIDE PROSPECT | 38-39-58N | 116-16-43W | PB | AG | MO | | | | | VEIN/SHEAR ZONE | F1-14 |
| | TRENCHES | 38-11-09N | 117-42-20W | AU | AG | CU | K? | | | | DISSEMINATED | |
| | TWICKEY CLAIM (?) | 38-17-29N | 116-24-55W | CU | PB | ZN | | | | | | F1-20 |
| M231620 | TROY MINE | 38-43-00N | 116-58-24W | AG | CU | MN | | | | | VEIN | F1-5b,E12 |
| M231833 | TYBO MINE | 38-22-07N | 116-24-08W | PB | ZN | AG | AU | CU | AS | FE | MN | REPLACEMENT; VEIN |

Table 5 (cont.). Copper, lead, and zinc occurrences in the Tonopah quadrangle.

| MRDS REC NO | NAME | LAT | LONG | COMMODITIES | | | | | | | | | DEPOSIT TYPE | TRACTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M233558 | UNNAMED PROSPECT | 38-44-00N | 117-14-00W | PB | ZN | AG | CU | | | | | | VEIN | Fl-7b |
| M231646 | UNNAMED PROSPECT | 38-59-05N | 117-56-05W | W | CU | | | | | | | | SKARN | Fl-1 |
| M231562 | UNNAMED PROSPECT A | 38-03-22N | 116-44-09W | PB | CU | ZN | MN | CD | | | | | SKARN | Fl-16 |
| M231626 | UNNAMED PROSPECT NO. 10 | 38-39-40N | 117-15-10W | CU | | | | | | | | | DISSEMINATED | Fl-7b |
| M233538 | UNNAMED PROSPECTS NO. 4 | 38-42-42N | 116-58-26W | MN | FE | | | | | | | | VEINS; GOSSAN | |
| | UNNAMED SHAFT | 38-22-17N | 117-39-57W | AG | CU | | | | | | | | VEIN | Fl-3a |
| M231589 | UV INDUSTRIES PROPERTY | 38-47-38N | 117-51-32W | MO | AG | CU | W | | | | | | | Fl-1 |
| M231627 | VALLEY GROUP | 38-43-55N | 117-14-22W | AG | PB | ZN | CU | AU | AS | W | HG | | VEIN | Fl-7b |
| M231557 | VESTAL CLAIM | 38-46-16N | 116-31-45W | AG | ZN | PB | | | | | | | VEIN/SHEAR ZONE | Fl-16 |
| WO16485 | WALL CANYON MINE (LAST CHANCE MINE) | 38-45-00N | 117-15-00W | SB | SE | CU | | | | | | | VEIN | Fl-7b |
| M233606 | WILLOW SPRINGS PROSPECT | 38-27-42N | 117-10-44W | AG | CU | PB | ZN | MO | HG | NI | CO | AU | DISSEMINATED | Fl-5a |
| M231713 | WIST WORKINGS | 38-39-56N | 116-17-05W | MN | PB | AG | MO | | | | | | VEIN | Fl-14 |
| M231654 | WONDERGIRL PROSPECT - 66 CLAIM | 38-59-30N | 117-52-39W | PB | CU | U | | | | | | | VEIN | Fl-1 |
| M233481 | ZABRISKIE COPPER PROSPECT | 38-31-36N | 116-53-17W | CU | | | | | | | | | VEINS | Fl-5b |

Table 6. Grade and tonnage models for copper, zinc-lead and iron skarn deposits (data from Jones and Menzie, 1986; Mosier, 1986; Mosier and Menzie, 1986).

| Variable | No. of Deposits | Percent of Deposits That Equal or Exceed Given Grade or Tonnage 90% | 50% | 10% |
|---|---|---|---|---|
| COPPER SKARNS | | | | |
| Tonnes x $10^6$ | 64 | 0.034 | 0.56 | 9.2 |
| Grade | | | | |
| Cu (percent) | 64 | 0.7 | 1.7 | 4.0 |
| Ag (gm/tonne) | * | | | 36 |
| Au (gm/tonne) | * | | | 2.8 |
| IRON SKARNS | | | | |
| Tonnes x $10^6$ | 169 | 0.32 | 7.2 | 170 |
| Grade | | | | |
| Fe (percent) | 169 | 36 | 50 | 63 |
| ZINC-LEAD SKARNS | | | | |
| Tonnes x $10^6$ | 34 | 0.16 | 1.4 | 12 |
| Grade | | | | |
| Zn (percent) | 34 | 2.7 | 5.9 | 13 |
| Pb (percent) | 34 | 0.87 | 2.8 | 7.6 |
| Ag (ppm) | * | | | 290 |
| Au (gm/tonne) | * | | | 0.46 |
| Cu (percent) | * | | 0.09 | 1.3 |

* Not all commodities were reported for all deposits.

Table 7. Grade and tonnage models for polymetallic replacement deposits (data from Mosier and others, 1986c)

| Variable | No. of Deposits | Percent of Deposits That Equal or Exceed Given Grade or Tonnage 90% | 50% | 10% |
|---|---|---|---|---|
| Tonnes x $10^6$ | 52 | 0.24 | 1.8 | 14 |
| Grade | | | | |
| Pb (percent) | 52 | | | |
| Zn (percent) | 52 | 0.82 | 3.9 | 19 |
| Cu (percent) | * | | 0.094 | 0.87 |
| Ag (gm/tonne) | * | | 150 | 690 |
| Au (gm/tonne) | * | | 0.19 | 4.4 |

* Not all commodities were reported for all deposits.

Table 8. Grade and tonnage models for polymetallic vein deposits (data from Bliss and Cox, 1986).

| Variable | No. of Deposits | Percent of Deposits That Equal or Exceed Given Grade or Tonnage 90% | 50% | 10% |
|---|---|---|---|---|
| Tonnes x $10^6$ | 75 | 0.00029 | 0.0076 | 0.2 |
| Grade | | | | |
| Ag (gm/tonne) | 75 | 140 | 820 | 4700 |
| Pb (percent) | 75 | 2.4 | 9 | 33 |
| Au (gm/tonne) | * | | 0.13 | 11 |
| Zn (percent) | * | | 2.1 | 7.6 |
| Cu (percent) | * | | | 0.89 |

* Not all commodities were reported for all deposits.

Table 9. Deposit grade and tonnage models for low-fluorine porphyry molybdenum deposits (data from Menzie and Theodore, 1986).

| Variable | No. of Deposits | Percent of Deposits That Equal or Exceed Given Grade or Tonnage 90% | 50% | 10% |
|---|---|---|---|---|
| Tonnes x $10^6$ | 33 | 16 | 94 | 560 |
| Grade Mo (percent) | 33 | 0.055 | 0.085 | 0.13 |

Table 10. Grade and tonnage models for epithermal gold-silver veins (data from D.A. Singer, written commun., 1986).

| Variable | No. of Deposits | Percent of Deposits That Equal or Exceed Given Grade or Tonnage 90% | 50% | 10% |
|---|---|---|---|---|
| Tonnes x $10^6$ | 61 | 0.047 | 0.56 | 6.7 |
| Grade | | | | |
| Au (gm/tonne) | 61 | 2.1 | 7.3 | 26 |
| Ag (gm/tonne) | 61 | 8 | 80 | 840 |
| Zn (percent) | * | | | 0.036 |
| Pb (percent) | * | | | 0.076 |
| Cu (percent) | * | | | 0.38 |

* Not all commodities were reported for all deposits.

Table II. Gold and silver occurrences in the Tonopah quadrangle.

| MRDS REC NO | NAME | LAT | LONG | COMMODITIES | | | | | | | | | DEPOSIT TYPE | TRACTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M231674 | 29 PINES MINE | 38-23-03N | 116-51-19W | AU | AG | U | | | | | | | VEIN | E-14 |
| M231515 | AJAX MINE | 38-04-03N | 116-28-34W | AU | AG | | | | | | | | VEIN; EPITHERMAL | E-22 |
| M233667 | ALICE MINE | 38-57-10N | 117-36-00W | AU | | | | | | | | | INSUFFICIENT DAT | E-6 |
| M231618 | ALLADIN GROUP | 38-01-06N | 116-11-09W | AG | | | | | | | | | VEIN | E-24 |
| M231837 | ALLIED GROUP-CHICAGO LODE | 38-49-51N | 117-34-15W | F | AG | | | | | | | | REPLACEMENT, VEIN | E-6 |
| M232048 | ALTO DIVIDE PROSPECT | 38-07-06N | 117-42-54W | AU | | | | | | | | | VEIN, EPITHERMAL | E-1 |
| W016438 | AMAZON, FISHERMAN, KNICKERBOCKER & PARK PROPERTIES | 38-01-00N | 116-09-00W | AG | AS | BA | CD | CU | MO | PB | SB | SN | PODIFORM | E-24 |
| W016435 | AMERICAN EAGLE AND CEDAR VEINS | 38-40-00N | 116-15-00W | AG | AU | CU | | | | | | | VEIN | E-19 |
| M231726 | ANTIMONIAL MINE (SILVERMONIAL MINE) | 38-02-10N | 116-10-11W | SB | AG | AU | | | | | | | VEIN | E-24 |
| M231676 | APRIL FOOL MINE | 38-32-16N | 117-04-07W | AU | F | | | | | | | | VEIN | E-11 |
| M233565 | ARLINGTON & AMBOY CLAIMS | 38-32-18N | 117-08-00W | AU | AG | | | | | | | | PLACER | E-11 |
| M233465 | ARROWHEAD ANNEX MINING CO. | 38-05-41N | 116-10-19W | AG | | | | | | | | | | E-24 |
| M231467 | ARROWHEAD BONANZA MINING CO. | 38-05-10N | 116-09-57W | AG | | | | | | | | | EPITHERMAL | E-24 |
| M233468 | ARROWHEAD CONSOLIDATED MINES CO. | 38-04-46N | 116-11-00W | AG | | | | | | | | | EPITHERMAL | E-24 |
| M233469 | ARROWHEAD ESPERANZA MINES CO. | 38-05-34N | 116-09-43W | AG | | | | | | | | | EPITHERMAL | E-24 |
| M231501 | ARROWHEAD EXTENSION | 38-04-50N | 116-10-12W | AG | AU | | | | | | | | REPLACEMENT VEIN | E-24 |
| M231502 | ARROWHEAD MINE | 38-05-07N | 116-10-21W | AG | AU | SB | | | | | | | REPLACEMENT VEIN | E-24 |
| M233470 | ARROWHEAD SILVER SIGNAL MINES | 38-04-46N | 116-10-24W | AG | | | | | | | | | EPITHERMAL | E-24 |
| M233500 | ARROWHEAD SYNDICATE MINES, INC. | 38-04-58N | 116-10-16W | AG | AU | | | | | | | | VEIN/LODE | E-24 |
| M231471 | ARROWHEAD WONDER MINES CO. | 38-05-10N | 116-09-59W | AG | | | | | | | | | VEIN/LODE | E-24 |
| 0011057 | ATWOOD PROSPECT | 38-45-30N | 117-51- W | AU | AG | W | | | | | | | QUARTZ VEIN | E-1 |
| M231566 | AUCTION CLAIM | 38-32-22N | 117-05-25W | AU | AG | | | | | | | | PLACER | E-11 |
| M242261 | B.C.H. MINERALS COMPANY | 38-01-33N | 117-16-55W | AU | AG | PT? | | | | | | | VEIN, SHEAR ZONE | E-1 |
| M231835 | BALD MOUNTAIN BILL PLACER | 38-57-17N | 117-35-45W | AU | AG | | | | | | | | VEIN, EPITHERMAL | E-6 |
| M231677 | BALD MOUNTAIN PROSPECT | 38-34-33N | 117-02-51W | AU | | | | | | | | | VEIN, EPITHERMAL | E-11 |
| M211599 | BANNOCK MINE | 38-09- N | 117-00- W | AU | AG | | | | | | | | VEIN, EPITHERMAL | |
| M030040 | BARCELONA MINE | 38-37-00N | 116-53-00W | AU | AG | CU | MO | FE | W | | | | VEIN; DISSEMINATED | E-12 |
| M233567 | BAXTER SPRINGS PROSPECT | 38-26-18N | 117-07-01W | AU | | | | | | | | | VEINS/SHEAR ZONE | E-11 |
| M241833 | BELCHER DIVIDE MINE | 38-00-12N | 117-15-27W | AG? | AU | | | | | | | | LODE | E-9 |
| M231761 | BELLE OF TONOPAH MINE | 38-05-06N | 117-13-35W | AU | AG | | | | | | | | VEIN, EPITHERMAL | E-9 |
| W016437 | BELLEHELEN (MERGER) MINE | 38-02-19N | 116-25-26W | AG | AU | | | | | | | | VEIN | E-22 |
| | BELLEHELEN PLACER | 38-04-45N | 116-29-02W | AU | AG | | | | | | | | PLACER | E-22 |
| M055315 | BELLEVILLE MINE | 38-20-18N | 117-59-47W | AU | BG | ZN | | | | | | | VEIN; TAILINGS | |
| W016434 | BELMONT SHAFT | 38-37-00N | 116-56-00W | AG | | | | | | | | | VEIN | |
| M231516 | BEN HUR MINE | 38-03-03N | 116-26-28W | AG | AU | V | | | | | | | VEIN; EPITHERMAL | E-22 |
| M211577 | BIG DYKE PROPERTY | 38-46-22N | 117-49-57W | AU | | | | | | | | | VEIN, EPITHERMAL | E-5 |
| M231678 | BIG FOUR, BIG PINE, RELIANCE, STRAY DOG, UNION NO. 9 MINES | 38-32-12N | 117-04-36W | AU | | | | | | | | | VEIN, EPITHERMAL | E-11 |
| M231564 | BIG SPRINGS MINE | 38-59-15N | 117-45-32W | AU | | | | | | | | | VEIN, EPITHERMAL | E-1 |
| M231568 | BLACK CAT CLAIM | 38-32-25N | 117-06-48W | AU | AG | | | | | | | | PLACER | E-11 |
| M211680 | BLACK MAMMOTH (TRAIN) PROSPECT | 38-32-41N | 117-05-27W | AU | THR | CU | | | | | | | VEIN/SHEAR ZONE | E-11 |
| M241852 | BLACK ROCK PROSPECT | 38-04-29N | 117-37-56W | AU? | | | | | | | | | STOCKWORK, VEIN | E-1 |
| M231569 | BLAKER-SLOANE PROPERTY | 38-30-19N | 117-04-12W | AG | AU | | | | | | | | BRECCIA | E-11 |
| M231754 | BLUE JACK PROSPECT | 38-18-16N | 117-17-09W | AU | AG | CU | | | | | | | | E-10 |
| M231570 | BOSTON CLAIM | 38-32-18N | 117-05-10W | AU | AG | | | | | | | | PLACER | E-11 |
| M211763 | BOSTON TONOPAH MINING CO., ACENITH SHAFT | 38-04-42N | 117-13-01W | AG | AU | | | | | | | | VEIN, EPITHERMAL | E-9 |
| M211704 | BRIGHAM GROUP | 38-35-57N | 116-15-12W | AG | | | | | | | | | VEIN (?), EPITHERMAL | |
| M233571 | BRIGHT AUGUST CLAIMS | 38-32-21N | 117-08-12W | AU | AG | | | | | | | | PLACER | E-11 |
| M211621 | BROAD CREEK PROSPECT | 38-47-40N | 117-12-30W | SB | AG | PB | AU | FE | | | | | VEIN, REPLACEMENT | E-7 |
| M231795 | BROTHERS GOLD GROUP | 38-59-36N | 117-19-20W | AU | AG | | | | | | | | VEIN, EPITHERMAL | E-7 |
| M242257 | BROUGHER-DIVIDE MINING CO. PROPERTY | 38-00-02N | 117-14-42W | AG? | AU | | | | | | | | LODE | E-9 |
| M231796 | BUCKEYE MINE (NEW MOOSE PROPERTY) | 38-59-06N | 117-15-31W | AU | BA | PB | ZN | AG | W | | | | VEIN; CONTACT METAMORPHIC | E-7,E1-7a |
| M231682 | BUCKEYE PROSPECT | 38-34-28N | 117-03-28W | AU | AG | | | | | | | | VEIN, EPITHERMAL | E-11 |
| M231618 | BUNKER HILL MINE | 38-22-18N | 116-24-30W | PB | AG | AU | | | | | | | LODE | E-20 |

Table 11 (cont.). Gold and silver occurrences in the Tonopah quadrangle.

| MRDS REC NO | NAME | LAT | LONG | COMMODITIES | | | | | | DEPOSIT TYPE | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| M231578 | BUTLER MINE | 38-45-57N | 117-52-40W | AU | AG | | | | | VEIN, EPITHERMAL | E-4 |
| M231764 | BUTTE TONOPAH MINE | 38-04-49N | 117-12-36W | AG | | | | | | VEIN, EPITHERMAL | E-9 |
| M241845 | CASTLE ROCK MINE | 38-05-08N | 117-44-45W | HG | AU? | SB | | | | VOLCANIC REPLACEMENT | |
| M233530 | CHARLES PROPERTY | 38-42-48N | 116-58-37W | AG | AU | MN | CU | | | VEINS | E-12 |
| M231592 | CHESTNUT MINE | 38-52-44N | 117-49-02W | AG | PB | | | | | VEIN (?) | E-5 |
| M231755 | CIMARRON AND SAN ANTONIO MINES | 38-20-30N | 117-15-10W | AU | AG | | | | | EPITHERMAL | E-10 |
| | CL CLAIMS | 38-41-59N | 116-19-23W | AU | | | | | | HYDROTHERMAL | E-19 |
| | CLAIM GROUP NO. 335 | 38-12-18N | 117-00-43W | AG | | | | | | VEIN (?) | |
| M231536 | CLIFFORD MINE | 38-08-22N | 116-28-46W | AG | AU | | | | | VEIN; EPITHERMAL | E-20 |
| M231565 | CLINTON BAIRD PROPERTY | 38-57-19N | 117-46-47W | AU | | | | | | VEIN, EPITHERMAL | E-5 |
| M231668 | CLIPPER MINE | 38-19-29N | 116-46-24W | AU | AG | | | | | EPITHERMAL | E-14 |
| M231537 | CLOVERDALE PLACER | 38-38-00N | 117-31-26W | AU | | | | | | PLACER | E-6 |
| M231524 | COMBINATION MINE | 38-34-55N | 116-51-39W | AG | SB | | | | | VEIN | E-12 |
| D011067 | COMMODORE MINE | 38-57-45N | 117-46- W | W | AG | | | | | UNKNOWN | E-5 |
| M231593 | COPPER BLOSSOM GROUP | 38-51-27N | 117-52-06W | CU | AG | | | | | UNKNOWN | E-5 |
| M231838 | COPPER KING GROUP | 38-55-01N | 117-34-59W | CU | AG | AU | | | | VEIN | E-6 |
| M231517 | CRAIG MINE | 38-02-35N | 116-27-33W | AG | | | | | | VEIN; EPITHERMAL | E-22 |
| M233552 | CT. LAWRENCE PROPERTY | 38-45-01N | 117-15-53W | AG | PB | ZN | AU | | | VEIN | E-7 |
| M232166 | CUTE MAID PROSPECT | 38-36-09N | 117-50-22W | AU | | | | | | VEIN, EPITHERMAL | E-4 |
| M242314 | D.M. HOMESTEAK CLAIM | 38-10-54N | 117-42-10W | AU | AG | BA | | | | HYDROTHERMAL BRECCIA | E-1 |
| M242355 | DAU CLAIMS | 38-10-46N | 117-58-30W | AU? | | | | | | VEIN | |
| M233484 | DAISY LANE PLACER | 38-38-23N | 117-35-14W | AU | AG | | | | | PLACER | E-6 |
| | DESERT QUEEN MINE | 38-04-12N | 117-13-21W | AG? | | | | | | UNKNOWN | E-9 |
| M233572 | DEXTER NO. 14 MINE | 38-32-21N | 117-04-32W | AU | AG | | | | | PLACER | E-11 |
| M231821 | DIRICK AND GILMORE MINES | 38-22-07N | 116-24-26W | PB | AG | AU | ZN | | | LODE; REPLACEMENT | E-20 |
| M242021 | DIVIDE EXTENSION MINE | 38-00-04N | 117-14-25W | AG | AU | | | | | LODE | E-9 |
| M231622 | DOLLAR MINE | 38-38-23N | 117-14-06W | SB | CU | AG | | | | VEIN | E-7 |
| M231822 | DOMINION GROUP | 38-26-44N | 116-23-16W | AG | | | | | | | E-20 |
| M231727 | DOOLEY ANDREWS MINE | 38-02- N | 116-11- W | AG | | | | | | VEIN, EPITHERMAL | E-24 |
| M231839 | DOONAN PROPERTY | 38-53-22N | 117-35-26W | AU | | | | | | VEIN, EPITHERMAL | E-6 |
| M233475 | DOREEN GROUP | 38-04-47N | 116-26-45W | AG | AU | | | | | VEIN | E-22 |
| M231037 | DREW MINE | 38-22-52N | 117-55-35W | HG | PB | AG | AU | | | REPLACEMENT | |
| M055008 | DREW MINE | 38-22-51N | 117-55-43W | HG | SB | ZN | AU | AG | | REPLACEMENT | |
| D001282 | EAGLE GROUP | 38-58- N | 117-46- W | W | AU | AG | | | | VEIN | E-5 |
| FS00157 | EAGLE NEST NOS. 5, 6 AND 7 | 38-48-00N | 116-30-00W | AG | PB | ZN | AU | | | VEIN/SHEAR ZONE | E-16 |
| M231539 | EAST GOLDEN MINE | 38-38-59N | 117-31-30W | AU | | | | | | VEIN/SHEAR ZONE | E-6 |
| M231566 | EASTER SUNDAY GROUP | 38-58-11N | 117-46-18W | AU | | | | | | VEIN, EPITHERMAL | E-5 |
| M231503 | EATON MINE | 38-03-13N | 116-12-16W | SB | AG | | | | | VEIN (?) | E-24 |
| M233531 | ED WELCH PROPERTY | 38-43-09N | 117-00-00W | AU | | | | | | VEIN | E-12 |
| | EDDYVILLE GROUP | 38-19-13N | 117-58-05W | AU | AG | CU | | | | VEIN | |
| M231525 | EL DORADO SOUTH MINE, HIGHBRIDGE MINE | 38-34-44N | 116-51-44W | AG | CU | PB | SB | AU | MO | VEIN | E-12 |
| M231540 | EL PRIMO CLAIM | 38-37-47N | 117-31-15W | AU | | | | | | PLACER | E-6 |
| W016439 | ELLENDALE MINE | 38-08-00N | 116-50-00W | AU | AG | | | | | VEIN | E-16 |
| M233660 | ERNST AND BROWN PROPERTY | 38-21-48N | 116-24-24W | AG | CU | | | | | VEIN | E-20 |
| M231568 | ESTA BUENA MINE | 38-58-07N | 117-45-18W | AG | SB | PB | | | | VEIN | E-5 |
| M233631 | EUREKA PROPERTY | 38-42-14N | 117-01-23W | AU | | | | | | VEIN | E-12 |
| M231579 | EVERETT PROPERTY | 38-44-39N | 117-54-53W | AU | | | | | | VEIN, EPITHERMAL | E-4 |
| M231733 | FAIRVIEW MINE | 38-42-20N | 117-03-47W | AU | | | | | | VEIN | E-12 |
| M231749 | FARRIS PROPERTY | 38-30-53N | 117-38-51W | AG | PB | | | | | VEIN | E-2a |
| M231541 | FERIN MINE | 38-44-53N | 117-26-16W | AU | | | | | | VEIN/SHEAR ZONE | E-7 |
| M231569 | FLAGSTAFF MINE | 38-58-37N | 117-46-16W | AU | | | | | | VEIN, EPITHERMAL | E-5 |
| M241883 | FLORENCE DIVIDE MINING COMPANY | 38-01-14N | 117-14-21W | AG | | | | | | VEIN/LODE | E-9 |
| M231756 | FLORENCE MINE | 38-19-50N | 117-16-23W | AG | PB | CU | AU | ZN | | VEIN | E-10 |
| M231766 | FRACTION EXTENSION SHAFT | 38-03-45N | 117-14-24W | AG | | | | | | VEIN, EPITHERMAL | E-9 |
| M241848 | G CLAIMS | 38-09-59N | 117-42-27W | AU | | | | | | BRECCIA, VEIN | E-1 |

Table 11 (cont.) Gold and silver occurrences in the Tonopah quadrangle.

| MRDS REC NO | NAME | LAT | LONG | COMMODITIES | | | | | | | | DEPOSIT TYPE | TRACT# |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M233574 | GEORGEY, EDITH AND FOOLEM CLAIMS | 38-32-20N | 117-07-18W | AU | AG | | | | | | | PLACER | E-11 |
| M233563 | GIANT CLAIMS | 38-22-55N | 116-51-04W | AU | HG | | | | | | | INTRUSIVE | E-14 |
| M233553 | GIBRALTER - SILVER HILL MINING CO. | 38-44-33N | 117-11-52W | AG | AU | PB | ZN | | | | | VEINS | E-7 |
| M231623 | GIBRALTER SILVER MINES CO. | 38-43-47N | 117-12-09W | AG | PB | ZN | AU | | | | | EPITHERMAL | |
| M231728 | GILA MINE | 38-02-05N | 116-10-59W | AG | CU | SB | PB | MO | AS | AU | ZN | VEIN/FAULT ZONE | E-24 |
| M241862 | GILBERT MINE | 38-10-21N | 117-44-31W | AU | | | | | | | | VEIN | E-1 |
| M241817 | GOEHRING PLACER CLAIM | 38-32-23N | 117-06-12W | AU | | | | | | | | VEIN, PLACER | E-11 |
| | GOLD DEPOSIT | 38-06-57N | 116-45-34W | AU | | | | | | | | UNKNOWN | E-15 |
| M231734 | GOLD HILL MINE | 38-46-21N | 117-03-01W | AU | | | | | | | | VEIN, EPITHERMAL | E-12 |
| | GOLD HILL SHAFT, JIM BUTLER TONOPAH, | 38-04-04N | 117-13-49W | AG | | | | | | | | REPLACEMENT VEIN | E-9 |
| M231580 | GOLD LEDGE MINE | 38-47-14N | 117-58-03W | AU | CU | | | | | | | VEIN | E-4 |
| M231841 | GOLD NUGGETT PLACER | 38-56-59N | 117-35-30W | AU | | | | | | | | PLACER | E-6 |
| M231716 | GOLD PROSPECT | 38-55-33N | 116-56-06W | AU | | | | | | | | EPITHERMAL | E-13 |
| M231596 | GOLD PROSPECT | 38-51-57N | 117-54-24W | AU | | | | | | | | VEIN (?), EPITHERMAL | E-5 |
| | GOLDEN ANCHOR MINE | 38-04-32N | 117-14-07W | AG? | | | | | | | | UNKNOWN | E-9 |
| M231684 | GOLDEN CRATER MINE | 38-31-56N | 117-04-37W | AU | | | | | | | | VEIN, EPITHERMAL | E-11 |
| M231542 | GOLDEN KING MINE | 38-38-35N | 117-32-50W | AU | AS | BE | | | | | | VEIN/SHEAR ZONE | E-6 |
| M232167 | GOLDEN MILE GROUP | 38-31-24N | 117-50-31W | AU | AG | CU | | | | | | VEIN | E-7 OR E2a |
| M233509 | GOLDYKE REEF MINE | 38-43-43N | 117-52-11W | AU | AG | | | | | | | VEIN | E-4 |
| M233619 | GOODING MINE | 38-57-35N | 116-51-13W | AG | AU | AS | SB | | | | | VEIN | E-13 |
| M241835 | GREAT WESTERN (?) | 38-04-20N | 117-14-39W | AU | AG | | | | | | | EPITHERMAL VEIN | E-9 |
| M233657 | GROUNDHOG NO. 1 CLAIM | 38-57-04N | 117-19-07W | CU | AU | AG | BA | SB | MN | | | VEIN | E-7 |
| M231767 | HALIFAX TONOPAH MINING COMPANY | 38-04-19N | 117-12-23W | AG | | | | | | | | REPLACEMENT VEIN | E-9 |
| M231801 | HANLON MINE | 38-57-45N | 117-20-24W | AU | | | | | | | | VEIN, EPITHERMAL | E-7 |
| M231600 | HANNAPAH MINE | 38-07-47N | 116-55-40W | AG | | | | | | | | VEIN, EPITHERMAL | E-15 |
| | HANNAPAH SILVER STAR | 38-07-26N | 116-54-41W | AU | AG | | | | | | | UNKNOWN | E-15 |
| M233576 | HAPPY DAY CLAIM | 38-32-17N | 117-08-34W | AU | AG | | | | | | | PLACER | E-11 |
| M242264 | HARMILL DIVINE MINE | 38-00-05N | 117-14-05W | AG? | AU? | | | | | | | VEIN/LODE | E-9 |
| M232168 | HARVEY-TAYLOR GROUP | 38-33-43N | 117-53-47W | AU | AG | | | | | | | VEIN, EPITHERMAL | E-4 |
| M233577 | HEARTS DESIRE, LUCKY DUCK, E-2 GUESS CLAIMS | 38-24-17N | 117-00-21W | AU | | | | | | | | PLACER | |
| M241884 | HILL OF GOLD MINE | 38-01-29N | 117-16-12W | AU | | | | | | | | EPITHERMAL, FAULT ZONE | E-9 |
| M231508 | HOOPER MINE | 38-39-16N | 116-56-44W | AG | | | | | | | | VEIN, EPITHERMAL | E-12 |
| | HOOSIER MINE | 38-31-57N | 117-01-44W | AU | | | | | | | | | E-11 |
| M233499 | HUMBRY CLAIM | 38-03- N | 116-47- W | AU | | | | | | | | | E-15 |
| M231750 | HYLAND PROPERTY | 38-30-44N | 117-37-38W | AG | | | | | | | | VEIN, EPITHERMAL | E-2a |
| M231649 | ILLINOIS MINE - SMUGGLER CLAIM | 38-59-40N | 117-52-52W | PB | AG | AU | ZN | CU | U | MN | | VEIN | E-5 |
| M231559 | IMPERIAL GROUP | 38-05-39N | 116-45-28W | AG | | | | | | | | VEIN/SHEAR ZONE | E-15 |
| M233670 | IONE SILVER MINE | 38-56-54N | 117-35-10W | AG | | | | | | | | VEIN | E-6 |
| M233510 | IRON HAT MINE | 38-46-10N | 117-04-09W | AU | AG | | | | | | | | E-12 |
| | JAH CLAIMS | 38-57-10N | 116-10-00W | AU | AG | AS | HG | | | | | HYDROTHERMAL | E-18 |
| M233580 | JAPAN CLAIM | 38-32-23N | 117-09-24W | AU | AG | | | | | | | PLACER | E-11 |
| W016430 | JEFFERSON MINE | 38-44-00N | 117-01-00W | AU | AG | PB | ZN | CU | | | | VEIN | E-12 |
| M231581 | JIM GROUP | 38-43-39N | 117-52-44W | AU | PB | | | | | | | VEIN | E-4 |
| M233581 | JUMBO MINE | 38-30-53N | 117-03-48W | AU | | | | | | | | UNKNOWN | E-11 |
| M231703 | JUMPING JACK GROUP | 38-50-19N | 116-59-36W | AU | AG | CLY | AL3 | HG | | | | VEIN | E-12 |
| M231685 | JUMPING JACK MINE | 38-32-09N | 117-04-38W | AU | | | | | | | | VEIN, EPITHERMAL | E-11 |
| M233508 | KEY FLOWER MINE | 38-54-43N | 117-47-08W | AU | AG | CU | PB | | | | | VEIN | E-5 |
| M231686 | KEYSTONE MINE | 38-30-30N | 117-03-26W | AU | F | AG | | | | | | BRECCIA PIPE | E-11 |
| M242287 | KEYSTONE PROSPECT | 38-04-10N | 117-14-38W | AU? | | | | | | | | EPITHERMAL (?) | E-9 |
| M231729 | KIETZKE MINE | 38-01-34N | 116-11-55W | AG | CU | | | | | | | VEIN/SHEAR ZONE | E-24 |
| M231545 | KING LODE CLAIM | 38-38-09N | 117-32-33W | AU | AG | | | | | | | VEIN, EPITHERMAL | E-6 |
| M231769 | KING TONOPAH MINE | 38-05-10N | 117-13-15W | AG | AU | | | | | | | VEIN, EPITHERMAL | E-9 |
| M233511 | KINGLAND PROSPECTS | 38-45-12N | 117-52-41W | AU | | | | | | | | VEIN | E-4 |
| M241882 | KNOX DIVIDE MINE | 38-00-38N | 117-14-09W | AG | | | | | | | | VEIN/LODE | E-9 |
| M231570 | KOHINOOR MINE | 38-58-05N | 117-44-58W | AU | | | | | | | | VEIN, EPITHERMAL | E-5 |

Table 11 (cont.). Gold and silver occurrences in the Tonopah quadrangle.

| MRDS REC NO | NAME | LAT | LONG | COMMODITIES | | | | | | | DEPOSIT TYPE | TRACTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M233655 | KONF PROPERTY/WHITE HORSE CLAIM | 38-55-42N | 117-16-37W | AU | W | | | | | | VEIN, EPITHERMAL | E-7 |
| M231825 | LARSN/KER PROSPECT | 38-22-21N | 116-23-27W | AG | MN | PB | | | | | REPLACEMENT; VEIN | E-20 |
| | LAST CHANCE CLAIM | 38-45-50N | 116-32-01W | AG | | | | | | | | E-16 |
| M231670 | LAST CHANCE GROUP | 38-22-58N | 116-55-25W | PB | AG | ZN | AU | | | | GOSSAN | E-14 |
| M231571 | LAST CHANCE GROUP | 38-58-02N | 117-48-31W | AU | AG | | | | | | VEIN, EPITHERMAL | E-5 |
| M233582 | LAST CHANCE, BLUE BELL, MONITOR GROUP | 38-32-22N | 117-06-51W | AU | AG | | | | | | PLACER | E-11 |
| M232051 | LAST HOPE PROSPECT | 38-09-55N | 117-40-33W | AU | | | | | | | VEIN, EPITHERMAL | E-1 |
| | LIMESTONE SPRINGS AREA | 38-46-27N | 116-16-19W | AU | AG | AS | HG | | | | HYDROTHERMAL | E-19 |
| M231671 | LITTLE JOE MINE | 38-17-21N | 116-45-50W | AU | AG | | | | | | EPITHERMAL | E-14 |
| M241837 | LLEWELLYN PROSPECT (?) | 38-16-20N | 117-34-48W | AG | PB | AU | | | | | VEIN | E-5 |
| | LOCALITY 3 OF KLEINHAMPL | 38-03-26N | 116-26-51W | AG | AU | | | | | | UNKNOWN | E-22 |
| | LOCALITY 5 OF KLEINHAMPL | 38-02-29N | 116-26-29W | AG | AU | | | | | | UNKNOWN | E-22 |
| M233512 | LONE STAR GROUP | 38-45-53N | 117-51-40W | AG | AU | | | | | | VEIN | E-4 |
| M231672 | LONGSTREET MINE | 38-22-45N | 116-42-35W | AU | AG | | | | | | VEIN; EPITHERMAL | E-14 |
| M231673 | LONGSTREET PLACERS | 38-22-56N | 116-40-37W | AU | | | | | | | PLACER | E-14 |
| M233172 | LOU-COSTA PROSPECTS | 38-35-47N | 117-50-28W | HG | AU | | | | | | FAULT ZONE | E-4 |
| | LUCKY BOY NO. 2 CLAIM | 38-10-48N | 117-00-08W | AU | AG | | | | | | SHEAR ZONE | |
| M231583 | LUCKY STRIKE MINE | 38-47-29N | 117-58-46W | AU | | | | | | | VEIN, EPITHERMAL | E-4 |
| M231707 | MAGNOLIA VEIN | 38-40-10N | 116-15-29W | AG | AU | PB | SB | SN | AS | ZN | VEIN | E-19 |
| M241861 | MAMMOTH PROSPECT | 38-11-09N | 117-42-12W | AG | AU | SB | | | | | VEIN, EPITHERMAL | E-1 |
| M231688 | MANHATTAN CONSOLIDATED MINE | 38-31-53N | 117-03-19W | AG | AU | SB | AS | F | | | LODE, REPLACEMENT | E-11 |
| M233583 | MANHATTAN GOLD DREDGE | 38-32-20N | 117-09-07W | AU | AG | | | | | | PLACER | E-11 |
| M233579 | MANHATTAN MINE | 38-32-07N | 117-04-37W | AU | AG | | | | | | VEINS/FAULT ZONE | E-11 |
| M241820 | MARIA CLAIMS | 38-10-48N | 117-59-29W | AU? | | | | | | | VEIN, SHEAR BRECCIA | |
| M231689 | MAYFLOWER MINE, KEILLEY FRACTION MINE | 38-31-59N | 117-04-32W | AU | | | | | | | VEIN, EPITHERMAL | E-11 |
| M241836 | MICKSPOT MINE | 38-23-03N | 117-42-43W | SB | AU | AG | AS | FE | CU | SE | VEIN | E-2 |
| M242268 | MILLERS MILL | 38-08-08N | 117-27-29W | AG | AU? | | | | | | OLD TAILINGS | |
| M233554 | MILLETT PROPERTY IN PABLO CANYON | 38-42-22N | 117-12-56W | AG | PB | AU | | | | | FISSURE VEIN | E-7 |
| M233173 | MINA GOLD MINE | 38-33-42N | 117-53-48W | AU | | | | | | | VEIN | E-4 |
| M231773 | MOLLY SHAFT | 38-03-51N | 117-12-47W | AG | | | | | | | VEIN, EPITHERMAL | E-9 |
| M241828 | MONARCH PITTSBURG MINE EXTENSION COMPANY | 38-04-12N | 117-14-42W | AG | AU | | | | | | VEIN | E-9 |
| M231708 | MONETARY AND PEYTONA VEINS | 38-39-54N | 116-15-24W | AG | AU | | | | | | VEIN/SHEAR ZONE | E-19 |
| M241860 | MONTE CRISTO MINE | 38-11-04N | 117-42-01W | AU | | | | | | | VEIN | E-1 |
| M233632 | MONTE CRISTO PROSPECT | 38-42-36N | 117-02-41W | AU | | | | | | | VEIN/FAULT ZONE | E-12 |
| M231527 | MOORE AND MARTIN PROPERTY | 38-34-51N | 116-51-37W | AG | | | | | | | VEIN, EPITHERMAL | E-12 |
| M233586 | MORNING STAR CLAIM | 38-32-31N | 117-06-31W | AU | AG | | | | | | PLACER | E-11 |
| M241849 | MOTHER'S LAST (LOST) HOPE PROSPECT | 38-11-31N | 117-41-53W | AU? | | | | | | | VEIN, BRECCIA | E-1 |
| M231804 | MURPHY MINE/GRIZZLY CLAIM | 38-56-40N | 117-16-47W | AG | AU | CU | SB | PB | ZN | | VEIN, EPITHERMAL | E-7 |
| M233674 | MURRAY GOLD PROSPECT | 38-51-05N | 117-34-24W | AU | AG | CU | | | | | VEIN | E-6 |
| M233587 | MUSTANG AND MUSTANG | 38-32-29N | 117-05-13W | AU | AG | | | | | | PLACER | E-11 |
| M231690 | MUSTANG, THANKSGIVING, BRONCO & GOLD METALS MINES | 38-32-29N | 117-04-49W | AU | | | | | | | VEIN, EPITHERMAL | E-11 |
| M241823 | NBMG SAMPLE SITE 1082 | 38-08-52N | 117-57-21W | CU | AG? | AU | | | | | VEIN | |
| M242284 | NBMG SAMPLE SITE 439 | 38-04-49N | 117-16-13W | AU | AG | | | | | | EPITHERMAL VEIN | E-9 |
| M233588 | NELLIE GRAY MINE | 38-32-21N | 117-05-09W | AU | AG | | | | | | VEIN/SHEAR ZONE | E-11 |
| M231691 | NEMO MINE | 38-32-28N | 117-06-55W | PB | CU | AU | AG | | | | VEIN | E-11,F15 |
| M231731 | NEW REVEILLE MINE | 38-00-16N | 116-11-17W | AG | PB | ZN | AU | | | | VEIN; REPLACEMENT | E-20 |
| M231775 | NEW YORK TONOPAH SHAFT | 38-03-39N | 117-14-14W | AG | | | | | | | VEIN, EPITHERMAL | E-9 |
| M231624 | NOB HILL CLAIM | 38-52-16N | 117-14-24W | AU | AG | | | | | | VEIN, EPITHERMAL | E-7 |
| M241846 | NOK CLAIMS | 38-08-50N | 117-42-33W | AU | | | | | | | VEIN, BRECCIA | E-1 |
| M231776 | NORTH STAR TUNNEL AND DEVELOPMENT CO. | 38-04-21N | 117-12-42W | AG | CU | AU | | | | | REPLACEMENT VEIN | E-9 |
| M231715 | NORTHUMBERLAND MINE, NORMAN MINE | 38-57-34N | 116-51-29W | AU | AG | AS | FE | | | | VEIN, DISSEMINATED | E-19 |
| M241847 | OHIO CLAIMS | 38-08-13N | 117-43-40W | AU | HG | | | | | | BRECCIA | E-1 |
| | OHIO TONOPAH MINE | 38-04-12N | 117-14-20W | AG? | | | | | | | UNKNOWN | E-9 |
| M231585 | OLLY DAVIS MINE | 38-45-43N | 117-52-42W | AU | | | | | | | VEIN, EPITHERMAL | E-4 |

Table 11 (cont.). Gold and silver occurrences in the Tonopah quadrangle.

| MRDS REC NO | NAME | LAT | LONG | COMMODITIES | | | | | | | DEPOSIT TYPE | TRACTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M232170 | OMCO MINE (OLYMPIC) | 38-36-29N | 117-53-33W | AU | AG | | | | | | VEIN, EPITHERMAL | E-4 |
| M231751 | URIZABA MINE | 38-30-38N | 117-36-58W | AG | AU | PB | ZN | | | | VEIN | E-2a |
| M231692 | OSO MINE | 38-32-41N | 117-05-16W | AU | | | | | | | REPLACEMENT | E-11 |
| M231505 | PACTOLUS GROUP | 38-40-11N | 117-48-10W | AU | | | | | | | VEIN, EPITHERMAL | E-4 |
| M231829 | PAGE MINE | 38-33-09N | 116-26-59W | SB | AG | SE | | | | | VEIN | E-20 |
| | PARADISE PEAK | 38- N | 117- W | AU | AG | | | | | | HOT SPRING GOLD-SILVER, DISSEMINATED | E-4 |
| M233589 | PEDRO CLAIM | 38-32-33N | 117-06-23W | AU | AG | | | | | | PLACER | E-11 |
| M231518 | PETERSON MINE | 38-02-31N | 116-25-30W | AG | AU | | | | | | VEIN; EPITHERMAL | E-22 |
| M231586 | PFEFFERCORN PROPERTY | 38-45-04N | 117-54-45W | AU | | | | | | | VEIN, EPITHERMAL | E-4 |
| M231807 | PLACER GROUND | 38-56-52N | 117-14-12W | AU | AG | | | | | | PLACER | E-7 |
| M241853 | PRETTY BOY CLAIMS | 38-06-45N | 117-42-47W | AU | CU | TUR | | | | | VEINS | E-1 |
| M231616 | PRUSSIAN MINE | 38-42-51N | 116-58-59W | AG | SB | PB | ZN | CU | | | VEIN | E-12 |
| M231618 | PRUSSIAN SOUTH MINE | 38-42-37N | 116-58-46W | AG | SB | PB | CU | ZN | | | VEIN | E-12 |
| M231590 | RAINBOW, SUNRISE & AFRICAN CLAIMS | 38-32-14N | 117-05-16W | AU | AG | | | | | | PLACER | E-11 |
| M231830 | RAMONA GROUP | 38-22-15N | 116-24-02W | MN | AG | AU | | | | | REPLACEMENT | E-20 |
| M231645 | RAY RICKETTS GROUP (KRAMER-OSGOOD PROPERTY) | 38-57-29N | 117-53-59W | AU | | | | | | | VEIN, EPITHERMAL | E-5 |
| M241850 | RED CLOUD CLAIMS | 38-11-14N | 117-41-27W | AU | AG? | | | | | | VEIN, BRECCIA, DISSEMINATED | E-1 |
| M231546 | RED HILL NO. 2 CLAIM | 38-36-57N | 117-31-11W | AU | | | | | | | VEIN/SHEAR ZONE | E-6 |
| M231738 | RED TOP CLAIM (PLACER MONZANITE) | 38-41-29N | 117-03-46W | W | MON | CU | AU | | | | PLACER | |
| M233591 | RED TOP PROSPECT | 38-32-08N | 117-03-29W | AU | | | | | | | VEIN | E-11 |
| M241821 | REDLICK CLAIMS | 38-11-02N | 117-59-40W | AU? | | | | | | | VEIN | |
| | RESCUE EULA, TONOPAH BELMONT, NORTH STAR, | 38-04-08N | 117-13-17W | AG | AU | CU | AS | AS | W | MN | QUARTZ, REPLACEMENT VEINS | E-9 |
| M231575 | RETURN MINE | 38-57-28N | 117-47-24W | AU | AG | SB | | | | | VEIN, EPITHERMAL | E-5 |
| M231601 | RICHARDSON MINE | 38-07-35N | 116-54-57W | AG | AU | SB | | | | | VEIN/SHEAR ZONE | E-15 |
| M233620 | RIFLE CLAIMS | 38-10-48N | 116-53-38W | CU | TUR | AU | AG | | | | VEIN | E-15 |
| M233592 | ROBUST CLAIM | 38-32-21N | 117-06-18W | AU | AG | | | | | | PLACER | E-11 |
| M241819 | ROCK HILL TUNGSTEN MINE AND MILL | 38-09-23N | 117-57-08W | W | AU | AG | MO? | | | | PLACER, VEIN | |
| M231740 | ROUND MOUNTAIN MINING CO. | 38-42-14N | 117-04-38W | AU | AG | | | | | | VEIN, EPITHERMAL | E-12 |
| M231739 | ROUND MOUNTAIN PLACER | 38-42-23N | 117-04-59W | AU | AG | | | | | | PLACER | E-12 |
| M231745 | ROYSTON COALITION MINE | 38-19-20N | 117-31-00W | PB | AG | CU | AU | TUR | | | VEIN | |
| M231602 | SAM JACK GROUP | 38-11-48N | 116-58-07W | AU | AG | | | | | | VEIN (?), EPITHERMAL | E-15 |
| M241851 | SAMPLE SITE 1276 | 38-12-03N | 117-42-23W | CU | AU | | | | | | BRECCIA/VEIN | E-1 |
| M231511 | SAN PEDRO SHAFT | 38-38-55N | 116-57-33W | AG | HG | ZN | PB | | | | VEIN | E-12,F1-5b |
| M233532 | SEEVER PROPERTY | 38-42-56N | 116-58-58W | AG | AU | | | | | | VEIN | E-12 |
| M233601 | SEPTEMBER CLAIM | 38-32-29N | 117-05-47W | AU | AG | | | | | | PLACER | E-11 |
| M233556 | SERGEANT PROPERTY | 38-43-47N | 117-13-28W | AG | AU | PB | ZN | | | | VEIN/FAULT ZONE | E-7 |
| M231847 | SHAMROCK DIGGINGS | 38-56-32N | 117-33-53W | AG | | | | | | | VEIN, EPITHERMAL | E-7 |
| M231848 | SHAMROCK MINE (PHILLIPS) | 38-56-43N | 117-34-39W | AG | AU | | | | | | VEIN, EPITHERMAL | E-6 |
| D001283 | SIERRA MAGNESITE MINE | 38-52- N | 117-53- W | AG | AU | PB | MN | | | | REPLACEMENT; VEIN | E-5 |
| M233533 | SIERRA NEVADA MINE | 38-42-46N | 116-58-35W | AG | AU | | | | | | VEINS | E-12 |
| | SILVER ACE NO. 1 CLAIM | 38-10-40N | 116-59-28W | AU | AG | | | | | | UNKNOWN | E-15 |
| M231603 | SILVER GLANCE MINING COMPANY | 38-08- N | 116-58- W | AU | AG | | | | | | VEIN, EPITHERMAL | E-15 |
| M231650 | SILVER KING AND RESO | 38-59-40N | 117-53-33W | PB | ZN | AG | AU | | | | VEIN/SHEAR ZONE | |
| M231604 | SILVER MOON GROUP | 38-07-30N | 116-55- W | AG | | | | | | | VEIN; EPITHERMAL | E-15 |
| M233663 | SILVER REEF CLAIM | 38-17-30N | 116-25-00W | AG | AU | | | | | | VEIN | E-20 |
| M233534 | SILVERSHIELD PROPERTY | 38-42-56N | 116-58-37W | AG | AU | | | | | | EPITHERMAL | E-12 |
| M231676 | SKY CLAIMS | 38-57-07N | 117-34-46W | BA | AU | AG | | | | | INSUFFICIENT DATA | E-6 |
| M233472 | SOUTH ARROWHEAD MINING CO. | 38-05- N | 116-11- W | AG | | | | | | | UNKNOWN | E-24 |
| M231519 | SOUTH STAR MINE | 38-01-49N | 116-25-06W | AG | AU | | | | | | VEIN; EPITHERMAL | E-22 |
| M231759 | SPANISH MINE | 38-17-51N | 117-16-21W | AG | | | | | | | VEIN, EPITHERMAL | E-10 |
| M241742 | STEIGMEYER PROPERTY | 38-40-39N | 117-04-57W | AU | AG | AS | SB | W | | | CARLIN SYLE GOLD | E-12 |
| M233633 | STEVENSON'S & SCHUPPY'S CLAIMS | 38-41-51N | 117-02-04W | W | AG | CU | | | | | VEINS | E-12,F1-5b |
| M231567 | SULLIVAN MINE | 38-46-55N | 117-56-49W | AU | | | | | | | VEIN, EPITHERMAL | E-7 |
| M231808 | SUMMIT CREEK MINE | 38-58-48N | 117-16-44W | BA | CU | AG | | | | | REPLACEMENT LENSE | E-7a |
| M231809 | SUMMIT GROUP/OPHIR CLAIMS (SULLIVAN MINE) | 38-57-00N | 117-19-29W | AU | AG | | | | | | VEIN, EPITHERMAL | E-7 |

Table 11 (cont.) Gold and silver occurrences in the Tonopah quadrangle.

| MRDS REC NO | NAME | LAT | LONG | COMMODITIES | | | | | | | | DEPOSIT TYPE | TRACTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M231696 | SUNSET PROSPECT | 38-31-28N | 117-03-26W | BA | SB | AU | | | | | | REPLACEMENT | E-11 |
| M233664 | SURPRISE PROSPECT | 38-24-05N | 116-24-20W | MN | AG | | | | | | | VEIN | E-20 |
| M231810 | TEICHART PROPERTY | 38-53-18N | 117-17-42W | SB | AG | PB | ZN | AU | BE | CU | | VEIN | |
| M241825 | THREE HILL PROPERTY | 38-03-43N | 117-14-55W | AU | | | | | | | | DISSEMINATED | E-9 |
| M231710 | TITUS PROSPECT | 38-43-32N | 116-08-06W | SB | AG | SE | | | | | | VEIN/SHEAR ZONE | |
| M233647 | TOM CAT CLAIMS | 38-52-49N | 117-13-58W | PB | AG | AU | | | | | | VEIN/SHEAR ZONE | E-7a |
| M231781 | TONOPAH - CALIFORNIA MINE | 38-03-46N | 117-13-29W | AG | | | | | | | | VEIN, EPITHERMAL | E-9 |
| M231784 | TONOPAH MINING COMPANY, SIEBERT SHAFT | 38-04-15N | 117-13-37W | AG | AU | CU | PB | ZN | | | | REPLACEMENT VEIN | E-9 |
| M241826 | TONOPAH-DIVIDEND MINING CO. PROPERTY | 38-00-13N | 117-14-37W | AG? | AU | | | | | | | LODE | E-9 |
| M233603 | TOP KNOB CLAIMS | 38-32-20N | 117-05-59W | AU | AG | | | | | | | PLACER | E-11 |
| M231699 | TORO BLANCO MINE | 38-32-21N | 117-03-44W | AU | | | | | | | | VEIN/REPLACEMENT | E-11 |
| M233496 | TORO CLAIMS (DANVILLE STIBNITE PROPERTY) | 38-43-41N | 116-33-32W | SB | AU | BA | | | | | | REPLACEMENT/BRECCIA | E-16 |
| | TRENCHES | 38-11-09N | 117-42-20W | AU | AG | CU | | | | | | DISSEMINATED | E-1 |
| M231620 | TROY MINE | 38-43-00N | 116-58-24W | AG | CU | MN | | | | | | VEIN, EPITHERMAL | |
| M231834 | UNCLE SAM CLAIM | 38-31-43N | 116-22-35W | AG | AU | | | | | | | | E-20 |
| M231675 | UNION AMALGAMATED MINE | 38-32-02N | 117-03-32W | AU | F | | | | | | | REPLACEMENT | E-11 |
| M231700 | UNION NO. 4 MINE | 38-32-09N | 117-03-44W | AU | F | | | | | | | REPLACEMENT | E-11 |
| | UNNAMED DRILL HOLE | 38-16-32N | 117-42-58W | AU | AG | | | | | | | DISSEMINATED | E-2 |
| M233513 | UNNAMED GOLD PROPERTY | 38-47-15N | 117-58-49W | AU | | | | | | | | VEIN | E-4 |
| M231778 | UNNAMED PROSPECT | 38-17-04N | 117-41-27W | AU | AG | CU | | | | | | DISSEMINATED | E-2 |
| M231780 | UNNAMED PROSPECT | 38-17-04N | 117-43-00W | AU | AG | | | | | | | DISSEMINATED | E-2 |
| M055422 | UNNAMED PROSPECT | 38-34-37N | 117-52-21W | HG | AU | | | | | | | | E-4 |
| M233514 | UNNAMED PROSPECT | 38-44-41N | 117-53-52W | AU | AG | PB | CU | MN | | | | SHEAR ZONE/VEIN | E-4 |
| M233507 | UNNAMED PROSPECT | 38-59-14N | 117-46-40W | AU | AG | | | | | | | VEIN (?) | E-5 |
| M211504 | UNNAMED PROSPECT B | 38-04-06N | 116-46-19W | AU | | | | | | | | VEIN | E-15 |
| M231563 | UNNAMED PROSPECT C | 38-05-05N | 116-42-42W | SB | SN | AG | BA | AU | HG | CU | | VEIN/SHEAR ZONE | E-15 |
| M211497 | UNNAMED PROSPECT NO. 1 | 38-46-25N | 116-31-15W | AG | | | | | | | | REPLACEMENT/FAULT ZONE | E-16 |
| M233615 | UNNAMED PROSPECT NO. 1 | 38-39-15N | 116-16-21W | AG | | | | | | | | VEIN | E-19 |
| M231625 | UNNAMED PROSPECT NO. 2 | 38-51-17N | 117-16-08W | AU | | | | | | | | | E-7 |
| M233609 | UNNAMED PROSPECTS | 38-50-59N | 117-00-12W | AU | AG | HG | CLY | | | | | INSUFFICIENT DATA | E-12 |
| M233485 | UNNAMED PROSPECTS | 38-30-24N | 117-25-28W | CU | AG | | | | | | | VEIN/SHEAR ZONE | |
| M233564 | UNNAMED PROSPECTS | 38-17-38N | 116-44-39W | AU | | | | | | | | VEIN/FAULT ZONE | E-14 |
| M233535 | UNNAMED PROSPECTS NO. 1 | 38-42-06N | 116-57-39W | AG | AU | | | | | | | VEINS | E-12 |
| | UNNAMED SHAFT | 38-22-17N | 117-39-57W | AG | CU | | | | | | | VEIN | E-2 |
| | UNNAMED SHAFT | 38-02-26N | 117-26-15W | AU? | AG? | PB? | CU? | | | | | VEIN | |
| M242273 | W.S. NO. 97 CLAIMS | 38-02-07N | 117-25-47W | AU? | AG? | | | | | | | VEIN, FAULT | E-1a |
| M231512 | WAR EAGLE GROUP | 38-39-33N | 116-56-30W | AU | AG | PB | CU | | | | | VEINS | E-12 |
| M231513 | WARREN GOLD MINE | 38-40-07N | 116-55-38W | AU | AG | | | | | | | VEIN, EPITHERMAL | E-12 |
| M231506 | WARRIOR MINE | 38-36-55N | 117-49-53W | AU | AG | CU | PB | | | | | VEIN, EPITHERMAL | E-4 |
| | WELL MINE | 38-30-29N | 117-03-31W | AU | | | | | | | | | E-11 |
| M233473 | WEST ARROWHEAD MINES CO. | 38-05-30N | 116-10-27W | AG | | | | | | | | | E-24 |
| M055300 | WEST END CONSOLIDATED MINING COMPANY | 38-04- N | 117-14- W | BA | AG | AU | HG | | | | | REPLACEMENT VEIN | E-9 |
| M241824 | WEST TONOPAH MINE | 38-04-22N | 117-14-47W | AG | AU | | | | | | | EPITHERMAL VEIN | E-9 |
| M055301 | WHITE CAPS MINE, MORNING GLORY MINE | 38-31-53N | 117-02-56W | HG | AU | SB | AS | F | CU | | | LODE; REPLACEMENT | E-11 |
| D011047 | WHITE DIAMOND MINE | 38-46-30N | 117-50- W | AU | AG | W | | | | | | UNKNOWN | E-5 |
| M233606 | WILLOW SPRINGS PROSPECT | 38-27-42N | 117-10-44W | AG | CU | PB | ZN | MO | HG | NI | CO | AU | DISSEMINATED |
| M231607 | WOLFE TONE CLAIM | 38-32-28N | 117-05-04W | AU | AG | | | | | | | PLACER | E-11 |
| M233653 | YELLOW GOLD CLAIM/HOLE IN THE WALL GROUP | 38-56-54N | 117-19-43W | AU | AG | | | | | | | VEIN (?) | E-7 |
| M231608 | ZANZIBAR MINE | 38-31-58N | 117-02-42W | AU | | | | | | | | FAULT ZONE | E-11 |
| M233677 | ZENO PLACER MINE | 38-57-10N | 117-35-48W | AU | | | | | | | | PLACER | E-6 |

Table 12. Mercury and antimony occurrences in the Tonopah quadrangle.

| MRDS REC NO | NAME | LAT | LONG | COMMODITIES | | | | | | | DEPOSIT TYPE | TRACTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M055035 | A AND B MINE | 38-15-05N | 116-28-08W | HG | | | | | | | VEIN; DISSEMINATED | E-20 |
| M233031 | ALLEN MINE | 38-21-44N | 117-59-25W | HG | | | | | | | SHEAR ZONE | |
| M055302 | ANTELOPE PROSPECT | 38-53-18N | 117-48-50W | HG | | | | | | | FRACTURE FILLING | E-5 |
| M231726 | ANTIMONIAL MINE (SILVERMONIAL MINE) | 38-02-10N | 116-10-31W | SB | AG | AU | SE | | | | VEIN | E-24 |
| M231615 | ANTIMONY LODE PROPERTY | 38-42-56N | 116-59-31W | SB | PB | AS | | | | | VEIN | E-12 |
| | APK-1, APK-1 DRILL HOLES (NO. C1852) | 38-35-05N | 116-38-14W | SB | CU | | | | | | | E-20 |
| M231502 | ARROWHEAD MINE | 38-05-07N | 116-10-21W | AG | AU | SB | | | | | REPLACEMENT VEIN | |
| M055315 | BELLEVILLE MINE | 38-20-18N | 117-59-47W | AU | HG | ZN | | | | | VEIN; TAILINGS | |
| M233057 | BETTLES MINE | 38-22-47N | 117-59-56W | HG | | | | | | | SHEAR ZONE (?) | |
| M233033 | BETTY MINE | 38-21-22N | 117-56-22W | HG | | | | | | | LODE (VEIN) | |
| M231817 | BREAK MINE | 38-15-02N | 116-26-56W | HG | | | | | | | DISSEMINATED | E-20 |
| M055434 | BRIGHT BEAUTY PROSPECT | 38-21-10N | 117-56-19W | HG | | | | | | | | |
| M231621 | BROAD CREEK PROSPECT | 38-47-40N | 117-12-30W | SB | AG | PB | AU | FE | | | VEIN, REPLACEMENT | E-7 |
| M233035 | CARDINAL MINE | 38-22-06N | 117-55-59W | HG | | | | | | | LODE (VEIN) | |
| M241845 | CASTLE ROCK MINE | 38-05-08W | 117-44-45W | HG | AU? | SB | | | | | VOLCANIC REPLACEMENT | E-1 |
| M231524 | COMBINATION MINE | 38-34-55N | 116-51-39W | AG | SB | | | | | | VEIN | E-12 |
| M231622 | DOLLAR MINE | 38-38-23N | 117-14-06W | SB | CU | AG | | | | | VEIN | E-7 |
| M233037 | DREW MINE | 38-22-52N | 117-55-35W | HG | PB | AG | AU | | | | REPLACEMENT | E-4b |
| M055008 | DREW MINE | 38-22-51N | 117-55-43W | HG | SB | ZN | AU | AG | | | REPLACEMENT | E-4b |
| M231503 | EATON MINE | 38-03-13N | 116-12-16W | SB | AG | | | | | | VEIN (?) | E-24 |
| M231568 | ESTA BUENA MINE | 38-58-07N | 117-45-18W | AG | SB | PB | | | | | VEIN | |
| M055328 | FAULT LINE (COVENEY) PROSPECT | 38-22-43N | 117-56-16W | HG | | | | | | | | |
| M055309 | FINGER ROCK PROSPECT (WILSON CINNABAR) | 38-47-24N | 117-57-08W | HG | | | | | | | DISSEMINATED | E-4 |
| | FLETCHER PROSPECT | 38-21-12N | 117-56-40W | HG | | | | | | | UNKNOWN | |
| M231507 | FLOWER ANTIMONY MINE | 38-39-59N | 116-54-51W | SB | HG | SE | | | | | VEIN; POD | E-12 |
| M055314 | FLOWER QUICKSILVER MINE | 38-39-48N | 116-54-53W | HG | SB | SE | BA | | | | VEIN; DISSEMINATED | E-12 |
| M233563 | GIANT CLAIMS | 38-22-55N | 116-51-04W | AU | HG | | | | | | INTRUSIVE | |
| M233041 | HASBROUCK PROPERTY | 38-22-12N | 117-59-24W | HG | CU | | | | | | SHEAR ZONE | |
| M233042 | HITT MINE | 38-21-57N | 117-59-36W | HG | | | | | | | DISSEMINATED, SHEAR | |
| M055299 | HORSE CANYON MINE | 38-36-45N | 117-17-22W | HG | | | | | | | VEIN; DISSEMINATED | E-7 |
| M055464 | HUMPHREY PROPERTY | 38-53-24N | 117-32-14W | HG | | | | | | | PLACER (?) | E-6 |
| M055293 | INDIAN JOHNIE DICK PROPERTY | 38-55-58N | 117-33-51W | HG | | | | | | | FRACTURE FILLING | E-6 |
| M233043 | INMAN MINE | 38-21-32N | 117-55-57W | HG | | | | | | | POD, SHEAR ZONE, DISSEMINATED | E-4b |
| M055465 | IONE MERCURY PLANT | 38-56-21N | 117-38-05W | HG | | | | | | | | NEAR E-6 |
| M233044 | KEG PROSPECT | 38-22-41N | 117-56-52W | HG | | | | | | | SHEAR ZONE | |
| M233671 | KING PROSPECT | 38-54-45N | 117-33-13W | HG | | | | | | | FAULT CONTACT | E-6 |
| WO16484 | KING SOLOMON MINE | 38-40-00N | 116-40-00W | SB | SE | BA | | | | | VEIN | E-16 |
| M055322 | LAKEVIEW MINE | 38-23-33N | 117-55-19W | HG | | | | | | | VEINLETS, DISSEMINATED | E-4b |
| | LIMESTONE SPRINGS AREA | 38-46-27N | 116-16-19W | AU | AG | AS | HG | | | | HYDROTHERMAL | |
| M233045 | LOST STEERS MINE | 38-22-07N | 117-56-44W | HG | SB | | | | | | SHEAR ZONE, VEINLETS | |
| M231172 | LOU-COSTA PROSPECTS | 38-35-47N | 117-50-28W | HG | AU | | | | | | FAULT ZONE | |
| M231826 | LUCKY TRAMP PROSPECT | 38-16-50N | 116-28-00W | SB | SE | | | | | | VEIN | E-20 |
| M055295 | M AND M MINE | 38-15-10N | 116-27-24W | HG | | | | | | | DISSEMINATED | E-20 |
| M233046 | MAMMOTH MINE | 38-23-03N | 117-58-57W | HG | | | | | | | SHEAR ZONE | |
| M241861 | MAMMOTH PROSPECT | 38-11-09N | 117-42-12W | AG | AU | SB | | | | | VEIN, EPITHERMAL | |
| M055313 | MARIPOSA PROSPECT | 38-39-11N | 117-01-43W | HG | BA | | | | | | DISSEMINATED, VEIN | FI-5b |
| M231656 | MCKAY NO. 7 CLAIM | 38-57-24N | 117-19-19W | U | HG | | | | | | INSUFFICIENT DATA | E-7 |
| M055017 | MERCURY MINING CO. MINE | 38-55-22N | 117-33-09W | HG | | | | | | | VEIN, DISSEMINATED | E-6 |
| M055431 | MERCURY PROSPECT | 38-57-46N | 117-51-23W | HG | | | | | | | | E-5 |
| M241836 | MICKSPOT MINE | 38-23-03N | 117-42-43W | SB | AU | AG | AS | FE | CU | SE | VEIN | E-2 |
| M055442 | MICRO METAL MINE | 38-02-42N | 117-55-11W | HG | | | | | | | | |
| M231845 | MILTON CANYON MINE | 38-48-55N | 117-34-31W | SB | CU | AG | SE | | | | VEIN/SHEAR ZONE | E-6,FI-10 |
| M231047 | MINA DEVELOPMENT COMPANY | 38-22-25N | 117-56-52W | HG | | | | | | | SHEAR ZONE, DISSEMINATED | |
| M231048 | MOSER MERCURY MINE | 38-22-12N | 117-56-51W | HG | | | | | | | DISSEMINATED (?) | |
| M055038 | NEVADA CINNABAR MINE | 38-54-50N | 117-33-13W | HG | | | | | | | VEIN; DISSEMINATED | E-6 |

Table 12 (cont.). Mercury and antimony occurrences in the Tonopah quadrangle.

| MRDS REC NO | NAME | LAT | LONG | COMMODITIES | | | | | | | DEPOSIT TYPE | TRACTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M241847 | OHIO CLAIMS | 38-08-13N | 117-43-40W | AU | HG | | | | | | BRECCIA | E-1 |
| M231828 | OUTLOOK PROSPECT | 38-25-46N | 116-27-12W | SB | | | | | | | FRACTURE FILLING | E-20 |
| M231829 | PAGE MINE | 38-33-09N | 116-26-59W | SB | AG | SE | | | | | VEIN | E-20 |
| | PEE WEE GROUP | 38-31-01N | 117-01-01W | HG | | | | | | | | E-11 |
| M231616 | PRUSSIAN MINE | 38-42-51N | 116-58-59W | AG | SB | PB | ZN | CU | | | VEIN | E-12 |
| M231618 | PRUSSIAN SOUTH MINE | 38-42-37N | 116-58-46W | AG | SB | PB | CU | ZN | | | VEIN | E-12 |
| M055433 | RAMROD GROUP | 38-21-53N | 117-56-30W | HG | | | | | | | | |
| M500657 | REDBIRD NOS. 3 & 4 | 38-40-00N | 117-00-00W | HG | | | | | | | LODE | |
| M055005 | REWARD MINE | 38-21-48N | 117-57-55W | HG | CU | SB | | | | | DISSEMINATED, VEIN | |
| M055292 | SAN PEDRO MINE | 38-51-45N | 117-31-22W | HG | | | | | | | FRACTURE FILLING | E-6 |
| M231511 | SAN PEDRO SHAFT | 38-38-55N | 116-57-33W | AG | HG | ZN | PB | | | | VEIN | F1-5b,E-12 |
| M055310 | SCHEEBAR MINE | 38-48-46N | 117-49-00W | HG | W | F | | | | | DISSEMINATED | F1-1 |
| M055001 | SENATOR MINE | 38-40-01N | 117-00-36W | HG | BA | | | | | | VEINS | E-12 |
| M054793 | SOUTHVIEW | 38-33-42N | 117-52-20W | HG | | | | | | | | E-2a |
| M233051 | SULLIVAN PROSPECT, BLACK LIZARD PROSPECT | 38-21-10N | 117-56-52W | HG | | | | | | | | |
| M231696 | SUNSET PROSPECT | 38-31-28N | 117-03-26W | BA | SB | AU | | | | | REPLACEMENT | E-11 |
| M231810 | TEICHART PROPERTY | 38-53-18N | 117-17-42W | SB | AG | PB | ZN | AU | SE | CU | VEIN | E-7 |
| M231710 | TITUS PROSPECT | 38-43-32N | 116-08-06W | SB | AG | SE | | | | | VEIN/SHEAR ZONE | E-23 |
| M233496 | TOKO CLAIMS (DANVILLE STIBNITE PROPERTY) | 38-43-41N | 116-33-32W | SB | AU | BA | | | | | REPLACEMENT/BRECCIA | E-16 |
| M055425 | TROJAN PROSPECT | 38-37-58N | 117-54-36W | HG | | | | | | | FRACTURE FILLING | E-4 |
| M055291 | TWO INJUN PROSPECT | 38-55-48N | 117-34-01W | HG | | | | | | | DISSEMINATED | E-6 |
| M231743 | UNKNOWN PROSPECT | 38-40-00N | 117-00-58W | HG | | | | | | | VEIN | E-12 |
| M234051 | UNNAMED MINE | 38-21-36N | 117-55-08W | HG | | | | | | | INSUFFICIENT DATA | E-4b |
| M231058 | UNNAMED MINE | 38-23-14N | 117-56-07W | HG | | | | | | | SHEAR ZONE (?) | |
| M234050 | UNNAMED MINE, LOVING DRILL HOLE | 38-21-08N | 117-55-18W | HG | GEM? | | | | | | DISSEMINATED | E-4b |
| M055422 | UNNAMED PROSPECT | 38-34-37N | 117-52-21W | HG | AU | | | | | | | |
| M231563 | UNNAMED PROSPECT C | 38-05-05N | 116-42-42W | SB | SN | AG | BA | AU | HG | CU | VEIN/SHEAR ZONE | E-15 |
| M055418 | UTAH NEVADA MINE, BAILEY CINNABAR MINE, | 38-22-09N | 117-57-42W | HG | | | | | | | | |
| M055002 | VAN NESS MINE | 38-38-39N | 116-58-41W | HG | W | | | | | | VEIN; CONTACT | F1-5b |
| M016485 | WALL CANYON MINE (LAST CHANCE MINE) | 38-45-00N | 117-15-00W | SB | SE | CU | | | | | VEIN | E-7 |
| M233049 | WARLOCK MINE, SEITZ PROPERTY | 38-22-12N | 117-58-37W | HG | | | | | | | SHEAR ZONE | |
| M055301 | WHITE CAPS MINE, MORNING GLORY MINE | 38-31-53N | 117-02-56W | HG | AU | SB | AS | F | CU | | LODE; REPLACEMENT | E-11 |
| M055312 | WILDCAT PROSPECT | 38-39-05N | 116-58-29W | HG | BA | | | | | | VEIN | E-12 |
| M055435 | WURTZLER PROSPECT | 38-22-42N | 117-55-38W | HG | | | | | | | | E-4b |
| M055289 | YELLOW CAT MINE | 38-55-49N | 117-32-59W | HG | | | | | | | VEINS; LENS/SHEAR | E-6 |

Table 13. Deposit grade and tonnage model for hot-spring gold-silver deposits (data from D.A. Singer written commun, 1986).

| Variable | No. of Deposits | Percent of Deposits That Equal or Exceed Given Grade or Tonnage 90% | 50% | 10% |
|---|---|---|---|---|
| Tonnes x $10^6$ | 10 | 1.3 | 9.3 | 66 |
| Grade | | | | |
| Au (gm/tonne) | 10 | 1.4 | 2.6 | 4.7 |
| Ag (gm/tonne) | 10*(6) | | 6.3 | 79 |

*Ag grades are reported for only 6 deposits.

Table 14. Grade and tonnage models for sediment-hosted, disseminated gold-silver deposits (data from Bagby and others, 1986)

| Variable | No. of Deposits | Percent of Deposits That Equal or Exceed Given Grade or Tonnage 90% | 50% | 10% |
|---|---|---|---|---|
| Tonnes x $10^6$ | 35 | 1.1 | 5.1 | 24 |
| Grade | | | | |
| Au (gm/tonne) | 35 | 0.69 | 2.5 | 7.6 |
| Ag (gm/tonne) | * | | | 15 |

*Ag was not reported for all deposits.

Table 15. Barite and fluorite occurrences in the Tonopah quadrangle.

| MRDS REC NO | NAME | LAT | LONG | COMMODITIES | | | | | | DEPOSIT TYPE | TRACTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| M233666 | ALAMEDA GROUP | 38-50-35N | 117-34-34W | F | | | | | | INSUFFICIENT DATA | E-6 |
| M231837 | ALLIED GROUP-CHICAGO LODE | 38-49-51N | 117-34-15W | F | AG | | | | | REPLACEMENT, VEIN | E-6 |
| M231676 | APRIL FOOL MINE | 38-32-16N | 117-04-03W | AU | F | | | | | VEIN | E-11 |
| M233610 | BARITE OCCURRENCE | 38-42-41N | 116-15-13W | BA | | | | | | BEDDED | |
| M231816 | BAS CLAIMS | 38-11-28N | 116-22-45W | BA | | | | | | REPLACEMENT VEIN | |
| M231556 | BOSTON AND RICHMOND AREA | 38-46-45N | 116-31-11W | AG | BA | CU | SB | PB | ZN | VEIN/SHEAR ZONE | |
| | BROKEN TOE MINE | 38-09-31N | 117-57-43W | W? | F? | | | | | CONTACT METAMORPHIC | |
| M231796 | BUCKEYE MINE (NEW MOOSE PROPERTY) | 38-59-06N | 117-15-31W | AU | BA | PB | ZN | AG | W | VEIN; CONTACT METAMORPHIC | E-7,Fl-7a |
| M231538 | COLTON PROSPECT | 38-35-50N | 117-26-19W | F | | | | | | VEIN | E-6 |
| M241818 | FLORA PROSPECT | 38-09-40N | 117-57-19W | F | CU | MO | | | | VEIN/LODE | |
| M231840 | FLUORSPAR GROUP PROSPECT | 38-52-07N | 117-34-32W | F | | | | | | VEIN, REPLACEMENT | E-6 |
| | FLUORSPAR LOCALITIES | 38-45-45N | 116-04-10W | F | | | | | | DISSEMINATED | E-23 |
| | FLUORSPAR LOCALITY | 38-44-44N | 116-02-40W | F | | | | | | UNKNOWN | E-23 |
| M233578 | HIATT PROSPECT | 38-30-00N | 117-05-34W | BE | F | W | V | | | VEIN-LIKE/GRIESEN | E-11,Fl-5a |
| W000021 | IMCO PROPERTIES | 38-54-00N | 116-49-00W | BA | | | | | | BEDDED | |
| M231560 | JUMBO MINE | 38-03-30N | 116-42-34W | BA | | | | | | REPLACEMENT | |
| | KELLER CLAIMS | 38-57-23N | 116-27-58W | BA | | | | | | DISSEMINATED | |
| M231686 | KEYSTONE MINE | 38-30-38N | 117-03-26W | AU | F | AG | | | | BRECCIA PIPE, OPEN SPACE FILLING | E-11 |
| | MARIE CLAIMS | 38-04-20N | 117-50-11W | BA | | | | | | BEDDED | |
| M055313 | MARIPOSA PROSPECT | 38-39-11N | 117-01-43W | HG | BA | | | | | DISSEMINATED, VEIN | |
| M233672 | MARY JANE MINE (LAST CHANCE) | 38-49-50N | 117-34-31W | F | | | | | | VEIN | E-6 |
| M233673 | MORRAY FLUORITE PROPERTY | 38-49-52N | 117-34-38W | F | | | | | | INSUFFICIENT DATA | E-6 |
| M231714 | OLD SOLDIER MINE | 38-58-30N | 116-52-08W | BA | | | | | | BEDDED | |
| M055310 | SCHEEBAR MINE | 38-48-46N | 117-49-00W | HG | W | F | | | | DISSEMINATED | Fl-1,E-5 |
| M055001 | SENATOR MINE | 38-40-01N | 117-00-36W | HG | BA | | | | | VEINS | E-12 |
| M233676 | SKY CLAIMS | 38-57-07N | 117-34-46W | BA | AU | AG | | | | INSUFFICIENT DATA | E-6 |
| M231849 | SPAR PROSPECT | 38-52-39N | 117-36-15W | F | | | | | | REPLACEMENT, VEIN | E-6 |
| M231808 | SUMMIT CREEK MINE | 38-58-48N | 117-16-44W | BA | CU | AG | | | | REPLACEMENT LENSE | |
| M231696 | SUNSET PROSPECT | 38-31-28N | 117-03-26W | BA | SB | AU | | | | REPLACEMENT | E-11 |
| M231698 | THELMA MINE | 38-32-12N | 117-02-45W | AG | F | MO | | | | REPLACEMENT | Fl-5a,E-11 |
| M233496 | TORO CLAIMS (DANVILLE STIBNITE PROPERTY) | 38-43-41N | 116-33-32W | SB | AU | BA | | | | REPLACEMENT/BRECCIA | |
| M231675 | UNION AMALGAMATED MINE | 38-32-02N | 117-03-32W | AU | F | | | | | REPLACEMENT | E-11 |
| M231850 | UNION CANYON MINE | 38-52-18N | 117-35-55W | F | | | | | | VEIN, REPLACEMENT | E-6 |
| M231700 | UNION NO. 4 MINE | 38-32-09N | 117-03-44W | AU | F | | | | | REPLACEMENT | E-11 |
| M231504 | UNNAMED PROSPECT | 38-04-11N | 116-10-57W | MN | BA | | | | | REPLACEMENT | |
| | UNPROSPECTED BARITE LOCALITY | 38-59-35N | 116-10-17W | BA | | | | | | | |
| M055300 | WEST END CONSOLIDATED MINING COMPANY | 38-04- N | 117-14- W | BA | AG | AU | HG | | | REPLACEMENT VEIN | |
| M055312 | WILDCAT PROSPECT | 38-39-05N | 116-58-29W | HG | BA | | | | | VEIN | E-12 |
| | WINDY HILL PROSPECT | 38-29-27N | 117-06-35W | BA | | | | | | BEDDED (ALLUVIAL) | E-11 |

Table 16. Grade and tonnage models for simple antimony vein and disseminated deposits (data from Bliss and Orris, 1986a,b).

| Variable | No. of Deposits | Percent of Deposits That Equal or Exceed Given Grade or Tonnage 90% | 50% | 10% |
|---|---|---|---|---|
| VEINS | | | | |
| Tonnes x $10^6$ | 81 | 0.0000067 | 0.00018 | 0.0049 |
| Grade | | | | |
| Sb (percent) | 81 | 18 | 35 | 66 |
| Ag (gm/tonne) | * | | | 16 |
| Au (gm/tonne) | * | | | 1.3 |
| DISSEMINATED | | | | |
| Tonnes x $10^6$ | 23 | 0.0078 | 0.088 | 0.99 |
| Grade | | | | |
| Sb (percent) | 23 | 1.8 | 3.6 | 7 |

* Not all commodities were reported for all deposits.

Table 17. Grade and tonnage models for bedded barite deposits (data modified from Orris, 1986b)

| Variable | No. of Deposits | Percent of Deposits That Equal or Exceed Given Grade or Tonnage 90% | 50% | 10% |
|---|---|---|---|---|
| Tonnes x $10^6$ | 30 | 0.12 | 1.8 | 28 |
| Grade $BaSO_4$ (percent) | 30 | 64 | 88 | 96 |

Table 18. Miscellaneous mineral occurrences of interest in the Tonopah quadrangle.

| MRDS REC NO | NAME | LAT | LONG | COMMODITIES | DEPOSIT TYPE | TRACTS |
|---|---|---|---|---|---|---|
| M231674 | 29 PINES MINE | 38-23-03N | 116-51-19W | AU AG U | EPITHERMAL | |
| M231744 | 4 ACES AND JOKER CLAIM | 38-41-40N | 117-02-09W | U | DISSEMINATED | |
| | 6-MILE CLAIMS | 38-41-58N | 116-13-41W | U | UNKNOWN | |
| M231702 | AIR ANOMALY NO. 4 | 38-51-25N | 116-53-56W | U | EPITHERMAL | |
| | ANOMALY NO. 6 | 38-17-31N | 116-40-00W | U | FRACTURE ZONE | |
| M233624 | ARAGONITE PROPERTY | 38-30-23N | 117-37-56W | STN2 | SEDIMENTARY | |
| M231816 | BAS CLAIMS | 38-11-28N | 116-22-45W | BA STN2 | REPLACEMENT VEIN | |
| M231516 | BEN HUR MINE | 38-03-03N | 116-26-28W | AG AU V | VEIN; EPITHERMAL | |
| M233634 | BERNICE ANDERSON PROPERTY | 38-03-26N | 117-14-42W | U | INSUFFICIENT DATA | |
| M231732 | BEY GROUP | 38-42-46N | 117-02-22W | U | VEIN | |
| M231680 | BLACK MAMMOTH (TRAIN) PROSPECT | 38-32-41N | 117-05-27W | AU TUR CU | VEIN, EPITHERMAL/SHEAR ZONE | E-11,F1-5a |
| M231746 | BLACK SPRING DIATOMITE | 38-33-23N | 117-39-16W | DIT | SEDIMENTARY | |
| M241844 | BLUE BELL CLAIMS | 38-19-48N | 117-31-58W | TUR | VEIN | F1-9 |
| M241858 | BLUE BELL PROSPECT | 38-05-53N | 117-52-50W | TUR | VEIN (?) | F1-11 |
| M231747 | BLUE GEM MINE | 38-26-30N | 117-34-26W | TUR | REPLACEMENT | F1-9 |
| M231762 | BOBBY-JACK, JEEP, AND LINCOLN GROUPS | 38-09-23N | 117-18-29W | U | DISSEMINATED | |
| M231591 | BRUCITE MINE | 38-51-58N | 117-53-36W | MG | REPLACEMENT | |
| M231774 | C.O.D. CLAIM, SNOW STORM CLAIM | 38-18-18N | 117-31-34W | TUR | REPLACEMENT VEIN | F1-9 |
| | CANT MISS GROUP | 38-16-56N | 117-42-07W | U | VOLCANIC | |
| | CANYON RESOURCES CLAIM | 38-43-25N | 116-18-57W | FE MN | REPLACEMENT | F1-14 |
| M241864 | CARR-LOVEJOY MINE | 38-07-07N | 117-41-25W | TUR | VEIN (?) | F1-11 |
| M241863 | CARRIE MINE | 38-09-50N | 117-40-25W | TUR AG PB SB ZN CU MO W | VEIN/LODE | F1-11 |
| M232010 | COAL PROSPECT NO. 2 | 38-00-21N | 117-52-52W | COA4 | | |
| M232015 | COAL PROSPECT NO. 7 | 38-00-07N | 117-52-50W | COA4 | | |
| M232016 | COAL PROSPECT NO. 8 | 38-00-03N | 117-52-40W | COA4 | | |
| M242108 | COLUMBUS MARSH BORAX WORKS | 38-02-46N | 117-59-21W | B EVA K HAL | EVAPORITE | |
| M233477 | COPPER BLUE MINE | 38-31-55N | 116-53-50W | TUR | VEIN/SHEAR ZONE | F1-5b |
| | CROW SPRINGS MINE | 38-14-31N | 117-35-35W | TUR | DISSEMINATED | F1-9 |
| M233626 | DIATOMITE OR SILICA | 38-35-01N | 117-42-08W | DIT SIL | SEDIMENTARY | |
| M233625 | DIATOMITE PROSPECT | 38-32-15N | 117-45-09W | DIT | SEDIMENTARY | |
| M233501 | DIATOMITE PROSPECT | 38-36-17N | 117-49-09W | DIT | SEDIMENTARY | |
| | DIMENSION STONE AREA | 38-03-49N | 116-53-20W | STN2 | SEDIMENTARY | |
| M231567 | ENGLE-STODDER PROSPECT | 38-57-34N | 117-48-36W | FE | VEIN | |
| | EUREKA CLAIMS | 38-28-49N | 117-58-41W | U | REPLACEMENT | |
| W001573 | FLOWER PLACER GROUND | 38-42- N | 116-54- W | TI FE V HG | PLACER | |
| M231765 | FOSTER GROUP | 38-09-44N | 117-19-47W | U | UNKNOWN | |
| M241834 | GARIBALDI CLAIMS | 38-04-42N | 117-17-37W | U? MO | UNKNOWN | |
| M233519 | GREEN SPRING ANOMALY | 38-53-57N | 117-49-49W | FE | UNKNOWN-COVERED | |
| M231717 | HAZEL NO. 6 CLAIM | 38-56-50N | 116-53-01W | U | PENECONCORDANT | |
| W016431 | HENEBERGH TUNNEL | 38-41-00N | 117-04-00W | U | FRACTURE FILLING | |
| M233612 | HOT CREEK SPRINGS | 38-31-15N | 116-21-54W | MN | INSUFFICIENT DATA | |
| M030042 | HOT NO. 1 MINE | 38-36-04N | 116-56-47W | U MN BE MO ZN | DISSEMINATED | |
| M231705 | JACK GROUP | 38-41-07N | 116-18-26W | U V | UNKNOWN | |
| M242286 | LAMBERTUCCI PROPERTY | 38-04-47N | 117-16-54W | U P MO CLY | HYDROTHERMAL | |
| | LIBERTY SPRINGS MANGANESE | 38-16-39N | 117-14-47W | MN | | F1-12a |
| M231706 | LIME RIDGE GROUP | 38-42-09N | 116-11-14W | U | UNKNOWN | |
| | LITTLE CEDARS MINE | 38-12-02N | 117-13-05W | TUR | | F1-12b |
| M241832 | LOCALITIES U-14A, 14B, 15, AND 16 | 38-04-08N | 117-17-16W | U | FAULT ZONE | |
| M241831 | LOCALITIES U-19, 20, AND 21 | 38-03-56N | 117-17-39W | U | FAULT ZONE | |
| M241829 | LOCALITIES U-25, 10, 11, AND 12 | 38-05-24N | 117-18-39W | U | FAULT ZONES | |
| M233635 | LOCALITIES U-32, 33, 34, AND 35 | 38-10-08N | 117-19-19W | U | FAULT/VEIN (?) | |
| M233636 | LOCALITY U-37 | 38-06-48N | 117-15-45W | U | INSUFFICIENT DATA | |
| M233637 | LYDON PROSPECT | 38-04-37N | 117-11-32W | MN | INSUFFICIENT DATA | |
| M241838 | MANGUERITE MINE | 38-14-41N | 117-33-10W | TUR | UNKNOWN | F1-9 |
| M233478 | MARIS PEBBLE QUARRY | 38-12-15N | 116-57-09W | STN1 | STRATIFORM, BEDDED | |

Table 18 (cont.). Miscellaneous mineral occurrences of interest in the Tonopah quadrangle.

| MRDS REC NO | NAME | LAT | LONG | COMMODITIES | DEPOSIT TYPE | TRACTS |
|---|---|---|---|---|---|---|
| M233656 | MCKAY NO. 7 CLAIM | 38-57-24N | 117-19-19W | U HG | INSUFFICIENT DATA | |
| M233479 | MONARCH RANCH | 38-31-48N | 116-53-48W | NI CR CO CU | SHEAR ZONE | |
| | MONTA CRISTO | 38-07- N | 117-48-40W | TUR | | FI-11 |
| M231783 | MONTEZUMA MINE | 38-18-30N | 117-51-59W | TUR | REPLACEMENT VEIN | |
| | MOQUI-AZTEC | 38-19-38N | 117-53-43W | TUR | | FI-3 |
| M232028 | MORGAN PROSPECT | 38-00-05N | 117-52-42W | COAL | SEDIMENTARY | |
| M231735 | N & H GROUP | 38-41-59N | 117-00-43W | W U | VEINLETS | |
| M241854 | NBMG SAMPLE SITE 1268 | 38-07-04N | 117-43-38W | U ZEO FE MN | EPITHERMAL, BRECCIA | |
| M233480 | NO NAME NO. 2 MINE | 38-34-07N | 116-53-13W | TUR | VEINLETS | FI-5b |
| | NSC FLORCO NO. 19 | 38-46-05N | 116-04-07W | CLY | UNKNOWN | |
| M231782 | OSCAR WEHRENO MINE, BUNKER HILL MINE | 38-19-21N | 117-30-31W | TUR | REPLACEMENT VEIN | FI-9 |
| M231561 | PAINTED CHIEF CLAIM | 38-02-57N | 116-53-14W | SST | SEDIMENTARY | |
| M241842 | PERLEX CORP. PERLITE | 38-14-01N | 117-37-14W | PER STN GEM | VOLCANIC/VEINLET | |
| M231597 | PHELPS STOKES MINE | 38-53-34N | 117-49-30W | FE | REPLACEMENT | |
| M233498 | PHOSPHATE OCCURRENCE | 38-46-23N | 116-32-10W | P | SEDIMENTARY | |
| M231605 | PILOT GROUP | 38-12-57N | 116-59-25W | U | PENECONCORDANT | |
| M231737 | PINE GROUP | 38-43-32N | 117-02-08W | U | FRACTURE FILLING | |
| M241853 | PRETTY BOY CLAIMS | 38-06-45N | 117-42-47W | AU CU TUR | VEINS | FI-11 |
| | PRICHARDS STATION AREA | 38-41-04N | 116-10-36W | CLY | | |
| | RAINBOW PLACER CLAIMS | 38-02-45N | 116-53-09W | SST | PLACER | |
| M231720 | RAINBOW, VALLEY VIEW & CORD GROUP | 38-55-51N | 116-52-58W | U V | | |
| M231830 | RAMONA GROUP | 38-22-15N | 116-24-02W | MN AG AU | REPLACEMENT | |
| M233662 | RATTLESNAKE CANYON QUARRY | 38-27-10N | 116-24-15W | STN2 | INTRUSIVE | |
| M231738 | RED TOP CLAIM (PLACER MONZANITE) | 38-41-29N | 117-03-46W | W MON CU AU | PLACER | |
| M241827 | RICH AND RARE CLAIM, QUINSET PROSPECT | 38-05-06N | 117-16-41W | U | FAULT ZONE | |
| M231510 | ROUND MEADOW CANYON AREA | 38-41-02N | 116-53-31W | U | | |
| M241840 | ROYAL BLUE MINE | 38-19-26N | 117-31-27W | TUR | LODE | FI-9 |
| M231741 | SAGEBRUSH CLAIM | 38-41-31N | 117-01-44W | U | VEIN | |
| W001575 | SALISBURY WASH ILMENITE | 38-12- N | 117-01- W | TI FE | PLACER , MODERN | |
| M241855 | SAMPLE SITE 1095 | 38-09-48N | 117-52-27W | DIT | BEDDED | |
| M233602 | SPANISH SPRINGS | 38-27-33N | 117-01-27W | W MN | VEIN, PLACER | |
| M233664 | SURPRISE PROSPECT | 38-24-05N | 116-24-20W | MN AG | VEIN | |
| M231711 | TITUS TURQUOISE | 38-41-27N | 116-16-30W | TUR | | FI-14 |
| | TURQUOISE BONANZA MINE | 38-22-07N | 117-53-12W | TUR | | FI-3 |
| | TYBO CANYON MANGANESE PROSPECT | 38-22-22N | 116-22-43W | MN | UNKNOWN | |
| | U.S. VANADIUM PROSPECT | 38-43-09N | 116-16-15W | V U | | |
| M234050 | UNNAMED MINE, LOVING DRILL HOLE | 38-21-08N | 117-55-18W | HG GEMT | DISSEMINATED | |
| M231504 | UNNAMED PROSPECT | 38-04-11N | 116-10-57W | MN BA | REPLACEMENT | |
| M233617 | UNNAMED PROSPECT NO. 3 | 38-42-08N | 116-15-26W | U V | INSUFFICIENT DATA | |
| M233609 | UNNAMED PROSPECTS | 38-50-59N | 117-00-12W | AU AG HG CLY | INSUFFICIENT DATA | |
| M233538 | UNNAMED PROSPECTS NO. 4 | 38-42-42N | 116-58-26W | MN FE | VEINS; GOSSAN | |
| | URANIUM PROSPECT | 38-29-27N | 116-27-19W | U | UNKNOWN | |
| M231760 | VICTORY AND DEFENSE PROSPECTS | 38-16-57N | 117-17-19W | MN | REPLACEMENT, PLACER | |
| M233466 | VIOLET BLUE PROSPECT | 38-42-03N | 117-03-00W | W U | VEIN ALONG SHEAR | |
| | WARM SPRINGS CLAY | 38-11-12N | 116-24-23W | CLY | | |
| M233665 | WARM SPRINGS NO. 3 | 38-10-40N | 116-23-01W | TUR | INSUFFICIENT DATA | |
| D011072 | WILDWOOD GROUP | 38-17-45N | 117-44-52W | U | CONTACT | |
| | WILLIAMS PROPERTY | 38-12-25N | 116-25-42W | U | UNKNOWN | |
| M231713 | WIST WORKINGS | 38-39-56N | 116-17-05W | MN PB AG MO | VEIN | |
| M233482 | ZABRISKIE MINE | 38-34-07N | 116-52-42W | TUR | | |

Table 19. Levels of anomalous stream-sediment geochemistry for selected elements.

| Element | Anomalous Level | % Anomalous Basins |
|---|---|---|
| Ag | 1 ppm | 5% |
| As | 10 ppm | 10% |
| Cu | 50 ppm | 2.5 |
| Mo | 7 ppm | 5% |
| Pb | 70 ppm | 25% |
| Sb | 5 ppm | 10% |
| W (pan concentrate) | L100 ppm | 5% |
| Zn | 70 ppm | 25% |

Table 20. Expected deposit types for the tracts shown on plate 1.

| Tract | Area | Epithermal gold-silver veins | Hotspring gold-silver | Sediment hosted disseminated-gold silver | Simple antimony |
|---|---|---|---|---|---|
| E1 | Monte Cristo Range | X | X | X | |
| E2 | Southern Cedar Mountain | X | X | X | X(?) |
| E2a | Northern Cedar Mountain | X | X | X | |
| E3 | Royston Hills | X | X | X | |
| E4 | Stewart Valley and vicinity | X | X | | |
| E4b | Pilot Mountains | X | | X | |
| E5 | Paradise Range | X | X | X | |
| E6 | Southern Shoshone Mountains | X | X | X | X |
| E7 | Toiyabe Range | X | X | X | X |
| E9 | Tonopah-Divide Area | X | X | | |
| E10 | San Antonio Mountains | X | X | X(?) | |
| E11 | Manhattan District Area | X | X | X | X |
| E12 | Central Toquima Range | X | X | X | X |
| E13 | Northumberland District area | X | | X | |
| E14 | Southern Monitor Range | X | X | | |
| E15 | Saulsbury Wash | X | X | X | |
| E16 | Central Monitor Range | X | X | X | X |
| E18 | Antelope-Park Ranges | X | X | X(?) | |
| E19 | Morey Peak area | X | X | X | X |
| E20 | Southern Hot Creek Range | X | X | X | X |
| E22 | Kawich Range | X | X | | |
| E23 | Squaw Hills | X | X | X | |
| E24 | Reveille Range | X | X | X | X |

Table 21. Expected deposit types for tracts shown on plate 2.

| Tract | Area | low-fluorine porphyry molybdenum | porphyry copper | polymetallic replacement | polymetallic veins | tungsten skarn | iron skarn | copper skarn | lead-zinc skarn |
|---|---|---|---|---|---|---|---|---|---|
| FI1 | Paradise Range | X | X | X | X | X | X | X | |
| FI2 | Northern San Antonio Mountains | X | | X | X | X | | | |
| FI3 | Pilot Mountains | X | X | X | X | X | | X | X |
| FI3A | Southern Cedar Mountain | X | X | X | X | X | | | X |
| FI3b | Rock Hill | X | | | | X | | | |
| FI4 | Lone Mountain | X(?) | | X | X | X | | | |
| FI5a,b | Southern Toquima Range | | | X | X | X | | | X |
| FI6 | Northern Toquima Range | X(?) | X(?) | X | X | | | | |
| FI7a,b | Toiyabe Range | X | | X | X | X | | | |
| FI8 | Extreme Southern Toiyabe Range | X | X | X | X | | | X | X |
| FI9 | Royston Hills-Cedar Mountain | X | X | X | X | X | X | X | X |
| FI10 | Shoshone Range | X(?) | | X | X | X | | | X |
| FI11 | Monte Cristo Range | X | X | X | X | X | | | |
| FI12 | Northern Monitor Range | | | X | X | | | | X(?) |
| FI13 | Southern Hot Creek Range | | | X | X | | | | |
| FI14 | Morey Peak area | X(?) | | X | X | | | | |
| FI15 | Reveille Range | | | X | X | | | | |
| FI16 | Ellendale District and vicinity | X(?) | | | X | | | X | X |
| FI17 | Antelope-Park Range | X(?) | | | X | | | | |
| FI18 | Squaw Hills | | | X | X | | | | |
| FI19 | Monitor Range | | | | X | | | | |

Table 22. Estimations of undiscovered deposits.

| Deposit Type | Estimated Number of Deposits (Chance that there are at least the number listed of undiscovered deposits) | | |
|---|---|---|---|
| | 90% | 50% | 10% |
| Sediment-hosted disseminated gold-silver | 1 | 1 | 3 |
| Polymetallic replacement | 0 | 1 | 1 |
| Polymetallic vein | 4 | 7 | 12 |
| Epithermal vein | 2 | 4 | 8 |
| Hot-spring gold | 0 | 2 | 3 |