NBMG OFR 83-11
See also 83-12 for geochemical results.

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LONE MOUNTAIN/WEEPAH DISTRICT

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The Lone Mountain/Weepah (West Divide, Alpine, General Thomas Hills) mining district is centered around the periphery of Lone Mountain, a prominent geographical landmark approximately 10 miles west of Tonopah, in Esmeralda County, Nevada. The district is bounded on the north and northwest by the southern end of the Big Smoky Valley, on the east by Montezuma Valley and Paymaster Ridge, on the south by the northern end of Clayton Valley, and on the west by the approximate longitude 117°35'. Access to the district is along good dirt roads and jeep trails from U.S. Highway 95 and Nevada Highway 47. However, due to the excessively wet winter of 1982-83, many of the dirt roads are washed out or badly damaged.

Throughout Lone Mountain/Weepah's history, the district has been characterized by intermittent exploration and production. The earliest recorded mining activity dates back to 1863 when Mexicans made discoveries within the district (Thompson and West, 1881). The district was organized in 1864, abandoned in 1866, and reopened again in 1878. There was little recorded activity in the district until 1900 when the Tonopah rush generated renewed interest and exploration began again in the district. Production peaked for the Alpine district on the northwest side of Lone Mountain between 1903 and 1908, amounting to over $200,000 in gold and base metals (Phariss, 1974). Minor barite was produced south of the Lone Mountain from 1907 to 1919. In the Weepah district, activity between 1904 and 1927 was confined to mining the high grade surface gold deposits. The discovery of a large low grade gold deposit in 1927 by Horton and Traynor resulted in what has been described as the "last gold rush" in the western United States. Production from the deposit lasted from 1935 to 1937 and exceeded 1.8 million dollars (Sonderman, 1971). The district has produced in excess of $3,500,000 in gold, silver, lead and turquoise, with minor values in zinc, copper, and barite (Tingley, Muldonado, 1982). Activity within recent years has been confined to exploration and evaluation of existing properties, drilling and sampling, and performing assessment work. Many of the

older workings have been milled to recover residual minerals. At the time of examination private individuals were claim staking in the General Thomas Hills area. The district is currently non-producing.

The Lone Mountain/Weepah mining district is situated around the periphery of the Lone Mountain and Weepah plutons which intrude Precambrian to Late Cambrian clastic and carbonate sediments. The Precambrian units consist of the Wyman Formation, a quartzitic siltstone and sandy limestone interbedded with limestone and dolomite, and the massive Reed Dolomite. Overlying the sediments are the allochthonous Cambrian Deep Springs, Campito, Poleta, and Harkless Formations (Sonderman, 1971). Small, random roof pendants of Wyman Formation are scattered over the surface of Lone Mountain. The sediments are metamorphosed to hornsfels, phyllite, schist, marble, and tactite along the contact with the plutons.

The Weepah and Lone Mountain plutons are predominantly medium to coarse grained quartz monzonite with irregular gradations into granodiorite and granite and irregular masses of biotite granite. Phenocrysts within the igneous bodies exhibit parallel arrangements, suggesting flowage. Cutting the plutons are random, closely spaced aplitic dikes grading into pegmatitic dikes. Structurally controlled lamprophyre dikes fill northeast trending joints in the igneous masses (Sandy, 1965). The intrusives are moderately sericitized, epidotized, and argillically altered along fractures. Minor Late Tertiary trachyte dikes, possibly related to the volcanic activity in the Monte Cristo Range, cross cut rocks along the northern edge of Lone Mountain (Sandy, 1965). In the General Thomas Hills, diorite porphyry masses intrude Paleozoic sediments.

Subsequent to the intrusion of the dikes, late stage hydrothermal fissure quartz veins, lenses, and irregular masses were emplaced in the metasediments and igneous masses along fault and shear zones, forming prominent outcrops in the central and southern part of the district. Locally, the quartz veins are crushed, brecciated, and cemented with hematite stained silica. Adjacent to the veins, the carbonates are silicified (Phariss, 1974).

The intrusion of the Lone Mountain pluton domed the bedded sediments into an anticline structure which subsequently eroded to it's present form. The metasediments are draped around the pluton with the remnant limbs dipping away from Lone Mountain on three sides (Sandy, 1965; Sonderman, 1971). These anticlinal structures exhibit broad, complex, and en echelon folds; minor thrusts; flexures and high angle faults of small displacement. The metasediments are most intensely folded along the contact with the intrusive. The districts and mining areas are located along the limbs of the anticlinal structures (Sandy, 1965; Phariss, 1971), with most of the workings following either the igneous-sedimentary contact, or the northeast trending fault and vein system.

Sonderman (1971) suggests that tectonic activity preceeded or was contemporaneous with the early emplacement of the Weepah pluton. He also suggested that the dominant northeast-trending, right-lateral rotation shear pattern of the district is typical of Walker Lane tectonics and was probably Late Mesozoic age. Prominent normal and block faulting occurs on the northwest side of the mountain, paralleling the contact between the sediments and intrusive. Sandy (1965) attributes the block faulting and overall uplift of the district to Cenozoic basin and range faulting.

Mineralization in the district occurs in the skarn zones along or adjacent to the contacts of the intrusive bodies; as replacement bodies along bedding shears in the carbonates, primarily dolomites; or in shear zones in the tactite bodies. Sonderman (1971) suggests that the Weepah deposits are epithermal, precious metal veins of gold-silver type, probably emplaced in the Late Mesozoic. The main Weepah deposit is located along a quartz-filled, northeast-trending, right-lateral shear zone. Shallow, high grade pockets of auriferous sulfide ore occurs as replacement deposits in the carbonate rocks adjacent to the quartz veins. Gold occurs free in a quartz matrix intergrown with hematite after pyrite and chalcopyrite altered to gossan. Low grade gold ore occurs in granulated fault gouge. Alteration zones are minimal within the deposits (Sonderman, 1971).

The workings in the Alpine district occur in the skarn zone along the igneous-sedimentary contact. The low grade gold deposit, which occurs in the Precambrian Wyman Formation, is essentially the same as the Weepah deposit. The prevalent mineralization in Alpine is the high grade lead-zinc-silver replacement bodies in the Reed Dolomite. The ore deposits occur as irregualr lenses, pods, and pinching stringers along bedding planes and at the intersection of joints and bedding planes. Much of the primary sulfide ore has altered to carbonate, sulfate, and silicate minerals. Phariss (1974) suggests that the mineralization in Alpine is mesothermal and genetically related to the intrusion of the Lone Mountain Pluton with faults and shear zones serving as hydrothermal conduits and sites of hypogene mineralization.

The mineralization in the General Thomas Hills area is primarily supergene copper and lead minerals associated with shear zones and jointing in Precambrian and Cambrian bedded sediments which were intruded by Jurassic diorite masses.

REFERENCES - Lone Mountain/Weepah

Albers, J. P. and Stewart, J. H. (1972) Geology and mineral deposits of Esmeralda County, Nevada: NBMG Bulletin 78.

Ball, S. H. (1906) Notes on the ore deposits of southwestern Nevada and eastern California in Contributions to Economic Geology, 1905: USGS Bulletin 285.

Ball, S. H. (1907) Geologic reconnaissance of southwestern Nevada and eastern California: USGS Bulletin 308.

Bonham, H. F. and Garside, L. J. (1979) Geology of the Tonopah, Lone Mountain, Klondike, and northern Mud Lake quadrangles, Nevada: NBMG Bulletin 92.

_____ (1982) Geochemical reconnaissance of the Tonopah, Lone Mountain, Klondike, and northern Mud Lake quadrangles, Nevada: NBMG Bulletin 96.

Couch, F. B. and Carpenter, J. F. (1943) Nevada's metal and mineral production (1859-1940): NBMG Bulletin 38.

Edwards, G. and McLaughlin, W. A. (1972) Shell list no. 1 - K-Ar and Rb-Sr age determinations of California, Nevada, and Utah rocks and minerals: Isochron/West, no. 3, p. 1.

Ferguson, H. G. and Muller, S. W. (1953) Structural geology of the Hawthorne and Tonopah quadrangles, Nevada: USGS Professional Paper 216.

Kral, V. E. (1951) Mineral resources of Nye County: NBMG Bulletin 50.

Lake, A. (1904) The Lone Mountain district, near Tonopah, Nevada: Mining Science Press, v. 88, p. 246.

Lincoln, F. C. (1923) Mining districts and mineral resources of Nevada: Nevada Publishing Co., Reno.

Lovering, T. G. (1972) Jasperoid in the United States - its characteristics, origin, and economic significance: USGS Professional Paper 710.

Morrissey, F. R. (1968) Turquoise deposits of Nevada: NBMG Report 17.

Olson, J. C. and Hinrichs, E. N. (1960) Beryl-bearing pegmatites in the Ruby Mountains and other areas in Nevada and northwestern Arizona: USGS Bulletin 1082-E.

Oxnard, T. H. (1936) Weepah gold: EMJ, v. 137, #6, p. 300-303, 306.

Paher, S. W. (1970) Nevada ghost towns and mining camps: Howell North, Berkeley, California.

Phariss, E. I. (1974) Geology and ore deposits of the Alpine mining district, Esmeralda County, Nevada: University of Nevada-Reno, M.S. Thesis.

Sandy, J. (1965) Geology of the Long Mountain Intrusive, Esmeralda County, Nevada: Tulane University M.S. Thesis.

Schilling, J. H. (1968) Molybdenum resources of Nevada: NBMG Open-file Report 79-3.

Shamberger, H. A. (1975) The Story of Weepah, Esmeralda County, Nevada: Historical Mining Camps of Nevada, Series #7.

Silberman, M. L., et al. (1975) New K-Ar ages of volcanic and plutonic rocks and ore deposits in western Nevada: Isochron/West, no. 13, p. 13.

Silberman, M. L. and McKee, E. H. (1971) K-Ar ages of granitic plutons in north-central Nevada: Isochron/West, no. 1, p. 15.

Sondermann, F. J. (1971) The geology of the Weepah mining district, Esmeralda County, Nevada: M.S. Thesis, University of Nevada-Reno.

Spurr, J. E. (1906) Ore deposits of the Silver Peak quadrangle, Nevada: USGS Professional Paper 55.

Tingley, J. V. and Maldonado, F. (1982) Investigation of the mineral potential of the Clipper Gap, Lone Mountain-Weepah and Manhattan-Belmont plutons, Nevada: USGS Open-file Report 82.

U.S.G.S. (1979) Aeromagnetic map of the Lone Mountain area, Nevada: USGS Open-file Report 79-1456.