Golden Group Molybdenum Mine, Loraine Mining District, Kern County, California

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Acknowledgement and Disclaimer

The information in this paper is taken largely from published sources. I have reproduced this material and present it pretty much as I found it, not trying to harmonize discrepancies in mine or geologic descriptions. I have changed verb tenses for readability and have used some paraphrase. I have expanded abbreviations or special characters with full text (e.g. feet instead of ft., inches instead of ") *Italics indicate quotations*. Authors of the original information are indicated at the end of each paragraph. Paragraphs without a citation are my own material. The maps in this report have been compiled and rectified from digital and paper copies of original sources that were made at different scales and in different geographic projections. Therefore, many of the maps had to be adjusted or stretched. They do not fit perfectly. Most are accurate to within 100 feet, but reproduction and projection errors can be as much as 300 feet for some maps. PLSS means Public Land Survey System. That survey data was obtained from the U.S. Bureau of Land Management website.

MRDS, 2011, Mineral Resources Data System, U.S. Geological Survey, https://mrdata.usgs.gov/mrds/. This database relies on records that, in many cases, are inaccurate or imprecise. For example, if a report describes a mine as being in "Section 9", with no other information, MRDS plots the mine location in the center of the section. If a mine is reported in "SW ¼" of a section, MRDS plots the mine in the center of that SW quarter-section. Where I could confidently adjust an MRDS location of a mineral deposit to features identifiable in aerial photographs or topographic maps, I did so.

Help me make this report better. If you have any photographs, memories or reports for this mine, please send them to me so I can incorporate in this paper.

Avenza. pdf

All the maps in this report are available as georectified .pdf files. These can be read in the field (without cell phone tower reception) on your smart phone with the Avenza.pdf app. It is downloadable at https://www.avenza.com/avenza-maps/

This application takes my maps and puts a dot on your cell phone or tablet screen to show you where you are as you explore the areas covered by my maps. The free version only lets you load 3 maps a at time. Georectified maps can be obtained from me by request.

LOCATION

30S 32E Sec. 01 MDM 35.34999 -118.50092 (MRDS, 2011).

The deposit is at the east end of Centennial Ridge

PREVIOUS NAMES

HISTORY

OWNERSHIP

GEOLOGY

LORAINE DISTRICT

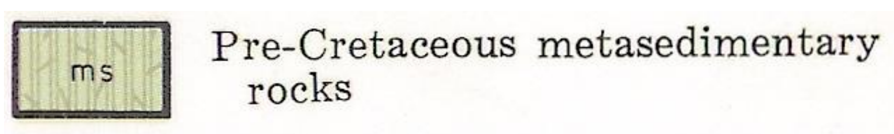
The Loraine district is underlain by. Mesozoic biotite hornblende quartz diorite and by roof pendants of pre-Cretaceous metasedimentary rocks. The quartz diorite is medium gray, equi-granular, medium grained, and, near contacts with roof pendants, is poorly to moderately foliated. The roof pendants arc composed of lavers of mica schist, quartzite. hornfels. and limestone. The largest roof pendent is a nearly continuous body, which in the Loraine district is one to one and a half miles wide and extends laterally several tens of miles from Tehachapi Creek on the south to Lake Isabela on the north. In the Loraine district the pendant trends north-northeast between Eagle Peak on the south to the old townsite of Piute. Numerous Tertiary rhyolite porphyry dikes have intruded the granitic and metamorphic rock throughout the district. The dikes range in width from a few feet to many tens of feet and are as much as several hundred feet long. Most of these dikes crop out as resistant ridge-forming masses that weather to a pale huff-yellow color, which contrasts with the predominantly reddish-brown color of the metasedimentary rocks and the knobby rounded outcrops of the granitic rocks. A. few Tertiary dikes of andesitic to dacitic composition are found mostly in the northeastern part of the district. Both types of dikes trend northwest to west-north west (Troxel and Morton, 1962, p. 42*).*

GOLDEN GROUP MOLYBDENUM MINE GEOLOGY

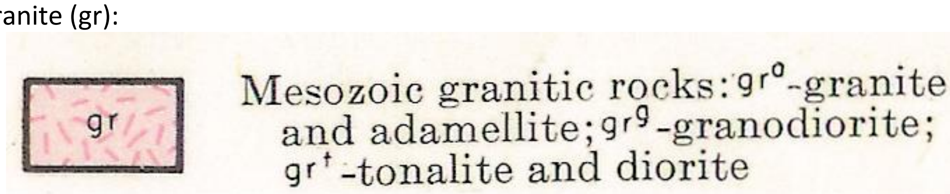
Smith, 1964

Smith (1964, Figures 7 and 8 this report) mapped the area of the Golden Group Molybdenum Mine at a contact between Pre-Cretaceous metasediments (ms) in Mesozoic granite.

Pre-Cretaceous Metasediments (ms):



Mesozoic granite (gr):



Louke, 1964

Louke (1964) mapped the area of the Golden Group Molybdenum Mines as being at a contact of metasedimentary rocks and granite. She described these unit as:

Undifferentiated Granitic Rocks (gr, Jurassic or Cretaceous)

Undifferentiated granitic rock which is considered to be virtually All of the composition of biotite-hornblende granodiorite in composition constitutes A major pluton which makes up the main mass at the

Piute Mountains and Red Mountain, and extends tens of miles north and south. The central metamorphic septum at the quadrangle roughly divides two outcropping areas of plutonic rock, but samples from both areas are nearly the same composition. The granodiorite-metamorphic contacts are sharp and fairly straight, indicating a certain amount of force during emplacement of the granodiorite (Louke, 1964, p. 12).

Notably in the upper Sand Canyon-Rancheria Creek area, the granodiorite is gneissoid, due to parallel aligned biotite flakes. This gneissoid texture typically occurs in the vicinity of metamorphic rocks and the foliation roughly parallels the bedding in the metamorphics. In some areas, such as the slopes south of Piute Peak, abundant xeno1iths of what appears to be metamorphic rock are present, in directionally arranged groups (Louke, 1964, p. 13).

The rock is the usual pepper and salt grey of the Sierran granodiorites and characterized by large plates and sheets of biotite up to ??? mm in diameter. Average grain size is about 0.05'' but between ??? mm and ??? mm the variation is great. The rock is composed or quartz (25·30%), potassium feldspar (8-10%), plagioclase (50-65%), and ferromagnesian minerals (10-15%) Granodiorite in some local areas on Rodeo Ridge (east of Goldpan Canyon and west of Sycamore Canyon) is light colored and characterized by low ferromagnesian content (Louke, 1964, p. 13).

Metallic mineralization contributed by this intrusion appears to be responsible for the gold, quartz veins, of the Claraville District, and of the Joe Walker Mine in Sec. 12, T.29S-R.32E MDM (Louke, 1964, p. 13).

Metasedimentary Rocks of the Kernville Series (IPk, ls, Jurassic?)

The Kernville series of metamorphosed sedimentary rocks is exposed discontinuously over a very large area of the southern Sierra Nevada. Metamorphic pendants and septa on this quadrangle are continuous with these on adjoining maps. The Kernville Series was originally described by Miller, 1931, and the description was enlarged by Miller and Webb (1940) There is not a great thickness of schist identifiable on this quadrangle, but near Tehachapi a continuous thickness of about 4,000 feet is exposed. This must be considered a minimum thickness for the formation to the south; Miller and Webb (1940) report a minimum thickness of more than 15,000 feet in the Bodfish area to the north (Louke, 1964, p. 15).

The metasediments of this area characteristically outcrop in elongate bodies the long axes of which are parallel. to the bedding planes of the rocks. This anisotropic resistance to plutonic engulfment is conjectured to be due to the linear (bedded) distribution of rocks of varying permeability. The massive quartzite which occurs in thick beds, edges and tips some of the pendants, is conjectured to be the rock most resistant to granitic invasion, and, in many places, to protect the schist of the interior (Louke, 1964, p. 14-15).

Some 75% of the thickness of the metasedimentary rocks is dark gray a schist with very subordinate thinly interbedded dull white quartzite. The schist is highly foliated, with the direction of foliation in most places close to parallel with the bedding. The rock is composed of quartz, plagioclase, hornblende, and biotite in variable proportions. Small areas of light-colored quartz-muscovite schist are present in the southern portion of the central septum. The interbedded fine-grained quartzite is composed or finely granular quartz, plagioclase, and scattered fine flakes of biotite (Louke, 1964, p. 16).

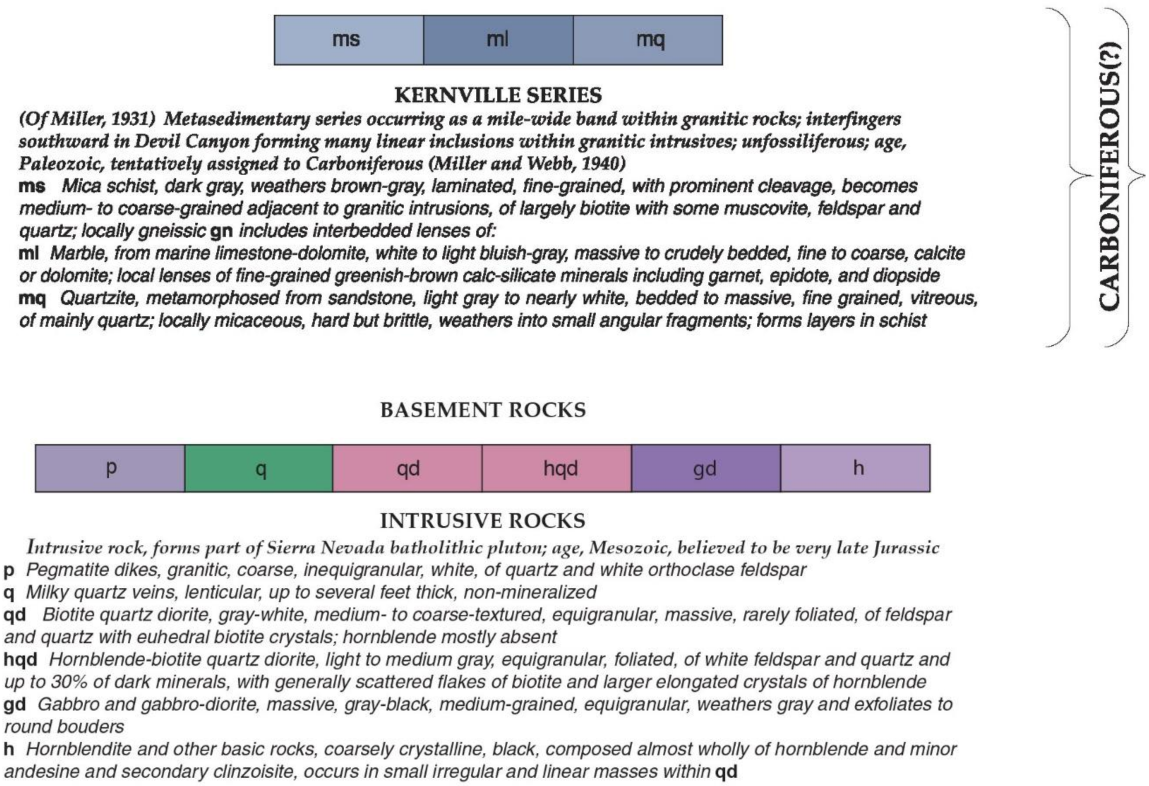
This monotonous pile of dark schist preserves to some degree an indication of the original sedimentary texture. The unmetamorphosed rock was obviously a thick pile of silty, perhaps sparsely sandy, shale *with subordinate sandstones [and] fairly thinly interbedded. No fossils or other small., fragile structures could be found preserved* (Louke, 1964, p. 16).

No rock -which can be identified as meta-conglomerate was found (Louke, 1964, p. 16).

Lenses of massive homogenous quartzite comprise an estimated 5% of the Kernville Series thickness. These are up to 500 feet thick and a mile long, extremely hard and massive, and notably slope-producing. Found associated with metamorphosed limestone [marble] in many places, the quartzite tends to be on strike where the marble pinches out. The rock is completely recrystallized; quartz grains are wholly cemented by quartz cement so that it breaks across the grains. It is a distinctive brownish pink. color, and no signs of bedding are preserved (Louke, 1964, p. 16-17A).

Dibblee and Minch (2008)

Dibblee and Minch (2008) mapped the Golden Group Molybdenum Mine at a contact between metasediment of the Kernville Series (ms) and hornblende diorite (hqd).



MINERALOGY

LORAINE DISTRICT

In the Loraine District, silver and gold ore present in quartz veins commonly, within or along the walls of the rhyolite dikes. This relationship suggests that the mineralizing solutions may have been a late phase of the intrusion of the dikes. Pre- mineral shearing, faulting. and sheeting provided channels for the emplacement of the veins. The veins also commonly extend from the rhyolite into schist or diorite, or lie wholly within them, as at the ***Ella and Atlas*** *mines. At the* ***Golden Group Molybdenum Mine Prospect,*** *a quartz vein strikes diagonally across a rhyolite porphyry dike to the edge of the dike, follows the contact* *for a few tens of feet, then swings into the quartz diorite where it splits or "horsetails" into minor fractures within a few feet. No known mineralization is associated with the dacite or andesite dikes (Troxel and Morton, 1962, p. 42).*

Wall-rock alteration in the Loraine District is pronounced in most of the silver and gold mines in the district. Kaolinization commonly extends a few tens of feet into hath walls of the vein -and alteration has been so intense that, in some mines, the nature of original wall rock is obscure. The altered rock is very weak and workings in it are held open only with difficulty, especially when it is wet (Troxel and Morton, 1962, p. 42).

The veins of the Loraine District consist principally of white to blue-gray quartz containing pyrite, cerargyrite, bromyrite, argentite, and free gold. Tetrahedrite and proustite also have been noted. Hydrous iron oxides and melanterite are common in oxidized zones near the surface. At the ***Minnehaha mine*** *large crystals of scheelite associated with free gold are in a vein in schist and limestone (Troxel and Morton, 1962, p. 42).*

Zinc, lead, and copper have been mined in the Loraine District at one locality in the district, the ***Blackhawk mine****. There, aurichalcite, sphalerite, goslarite, hemimorphite, galena, cerussite, chalcopyrite. and malachite are in a gangue of calcite and quartz, with associated pyrite, arsenopyrite, and pyrrhotite. The deposit consists of irregular replacement masses along a contact zone between metamorphic rocks and quartz diorite(Troxel and Morton, 1962, p. 42).*

In the Loraine District, several high-grade, closely spaced, and steeply dipping barite veins crop out in limestone on a sharp, high ridge between ***Studhorse and Hog Canyons on Ritter Ranch****. Two antimony prospects,* ***the Wiggins and Studhorse Canyon*** *deposits, have each yielded a few tons of ore. Stibnite and yellow antimony oxides are in steeply dipping, narrow fissure veins in highly bleached and altered granitic rock* (Troxel and Morton, 1962, p. 42).

GOLDEN GROUP MOLYBDENUM MINE MINERALOGY

DEVELOPMENT

LORAINE DISTRICT

Silver and gold valued at more than $600,000 has been yielded by the Loraine district since mining began in the 1890s. The tungsten, antimony, lead, zinc, and copper output has been valued at approximately $150,000. In 1959, a deposit of barite was being developed (Troxel and Morton, 1962, p. 42).

GOLDEN GROUP MOLYBDENUM MINE DEVELOPMENT

(Troxel and Morton, 1961, p. 143).

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MAPS

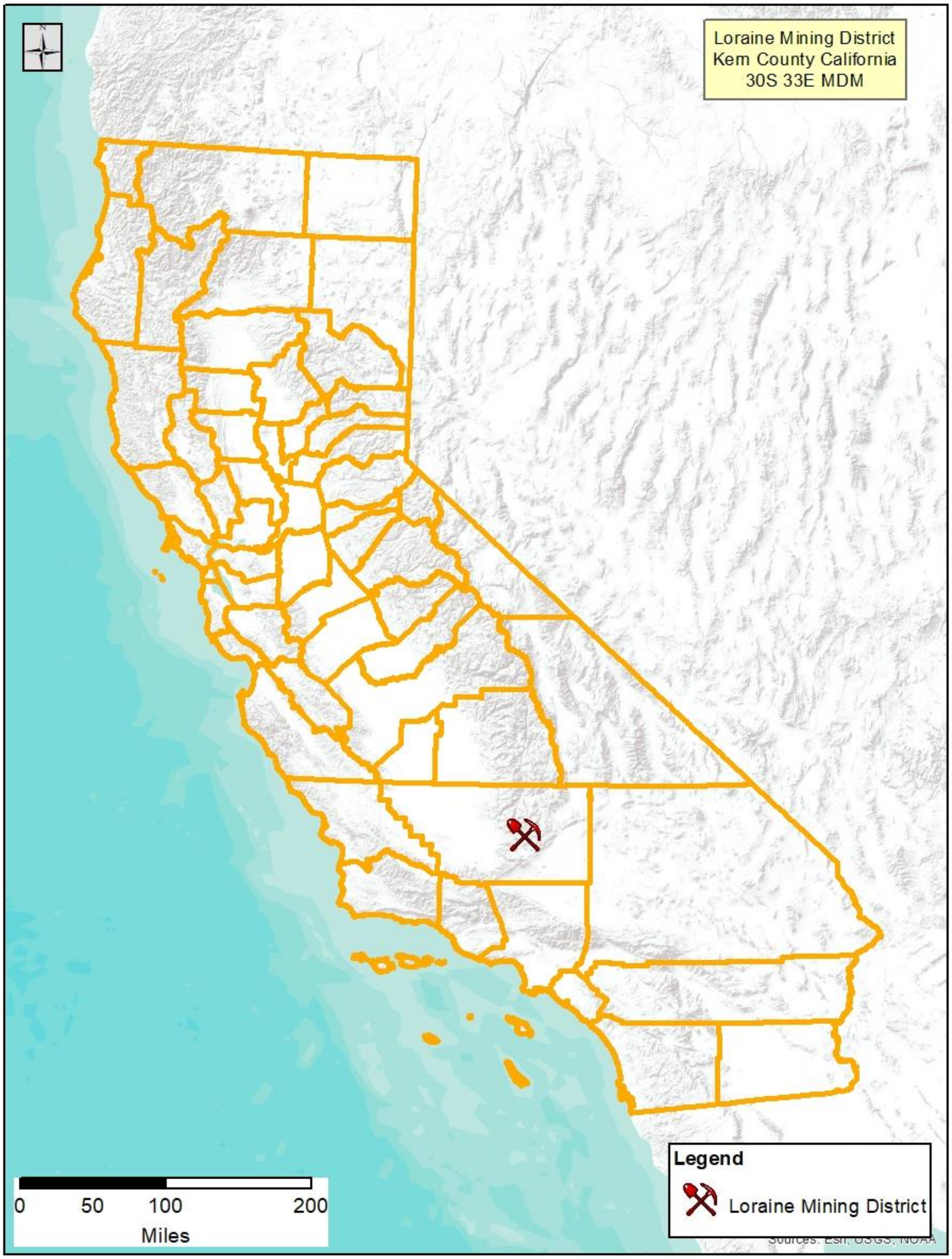

Figure 1. Location map of the Loraine Mining District in California.

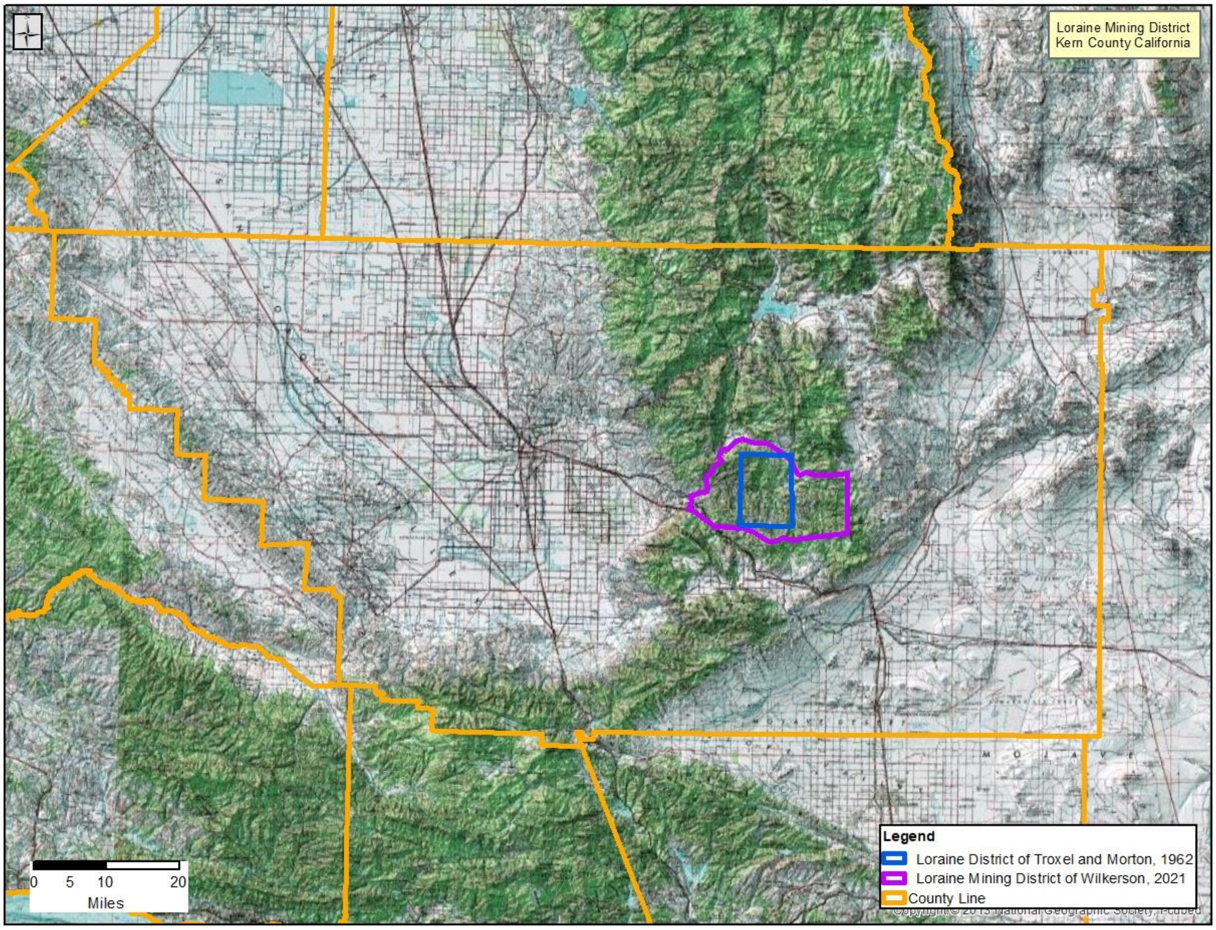

Figure 2. Location map of the Loraine Mining District in Kern County.

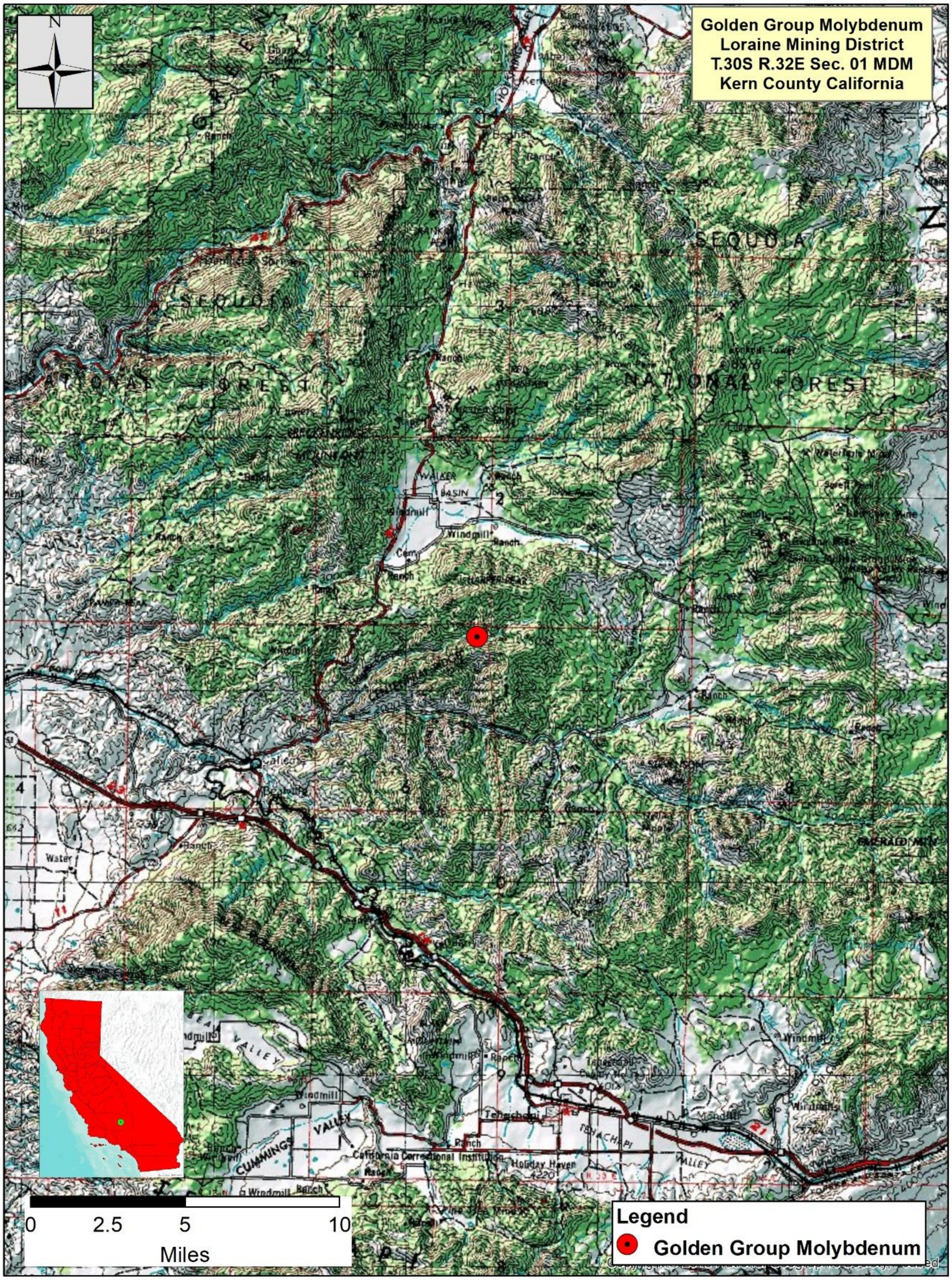

Figure 3. Regional topographic map of the Golden Group Molybdenum Mine. Scale 1:250K.

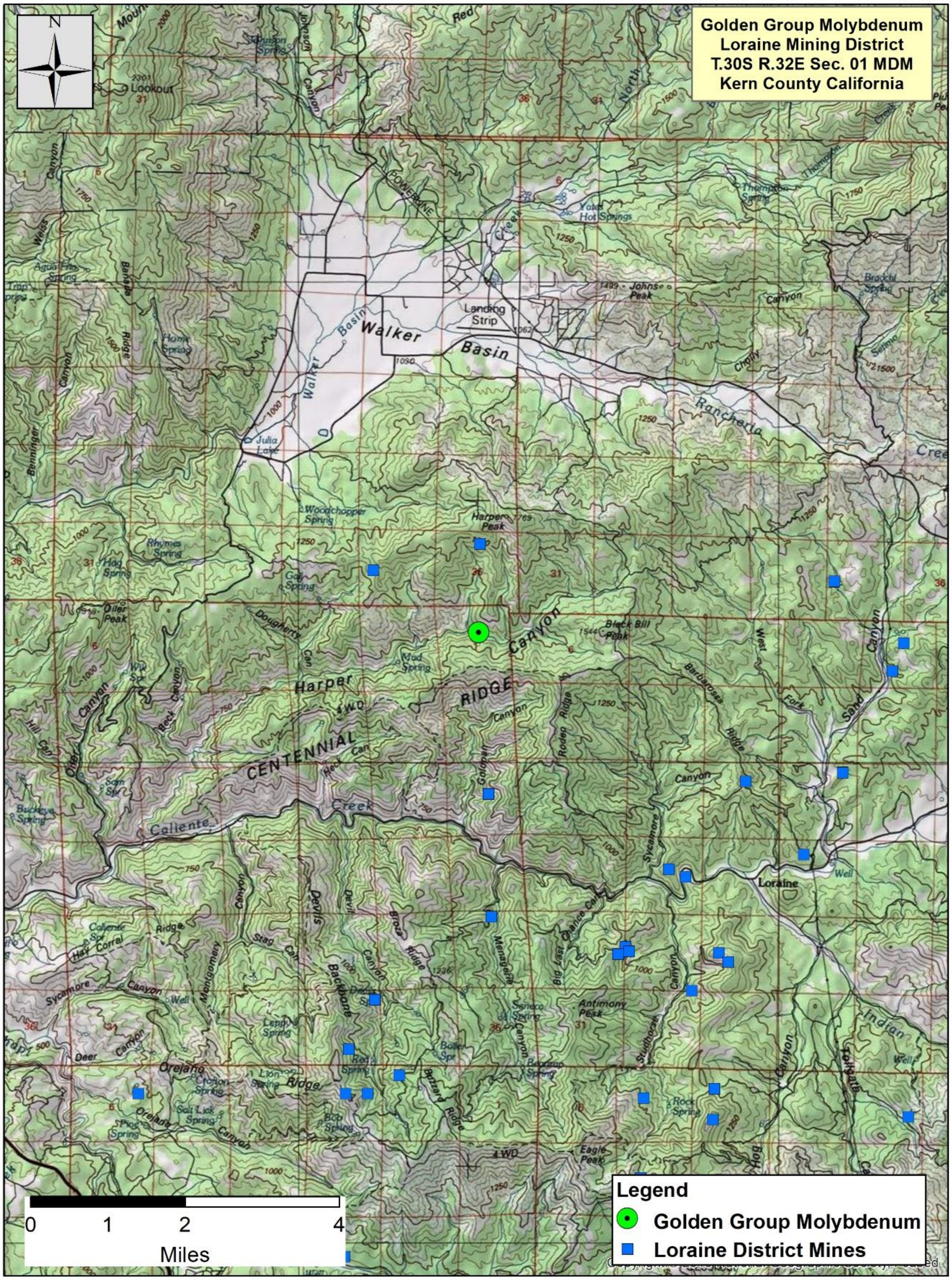

Figure 4. Topographic map of the Golden Group Molybdenum Mine and surrounding areas. Scale 1:100K

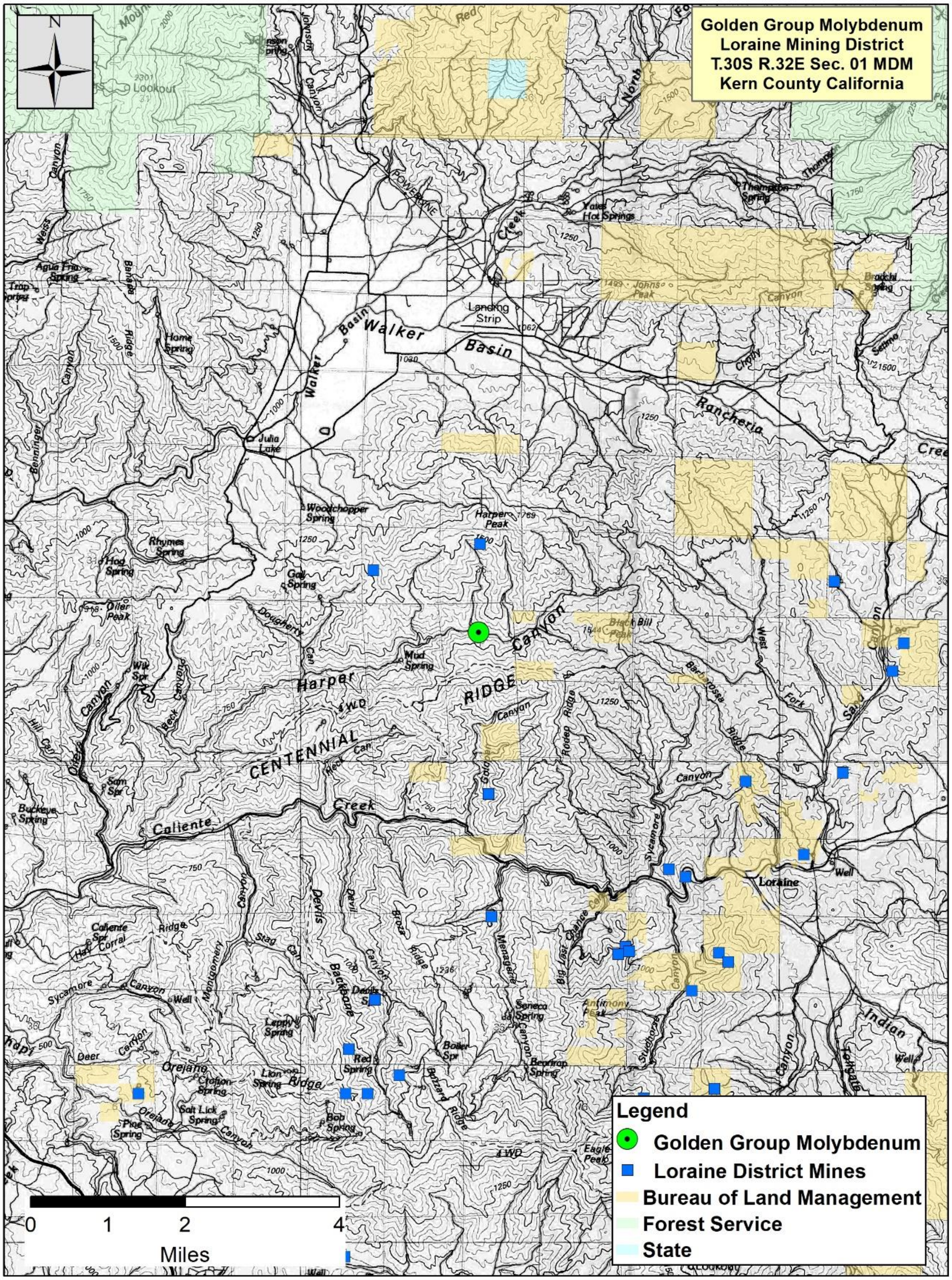

Figure 5. Land status map for the Golden Group Molybdenum Mine. Data from USBLM.

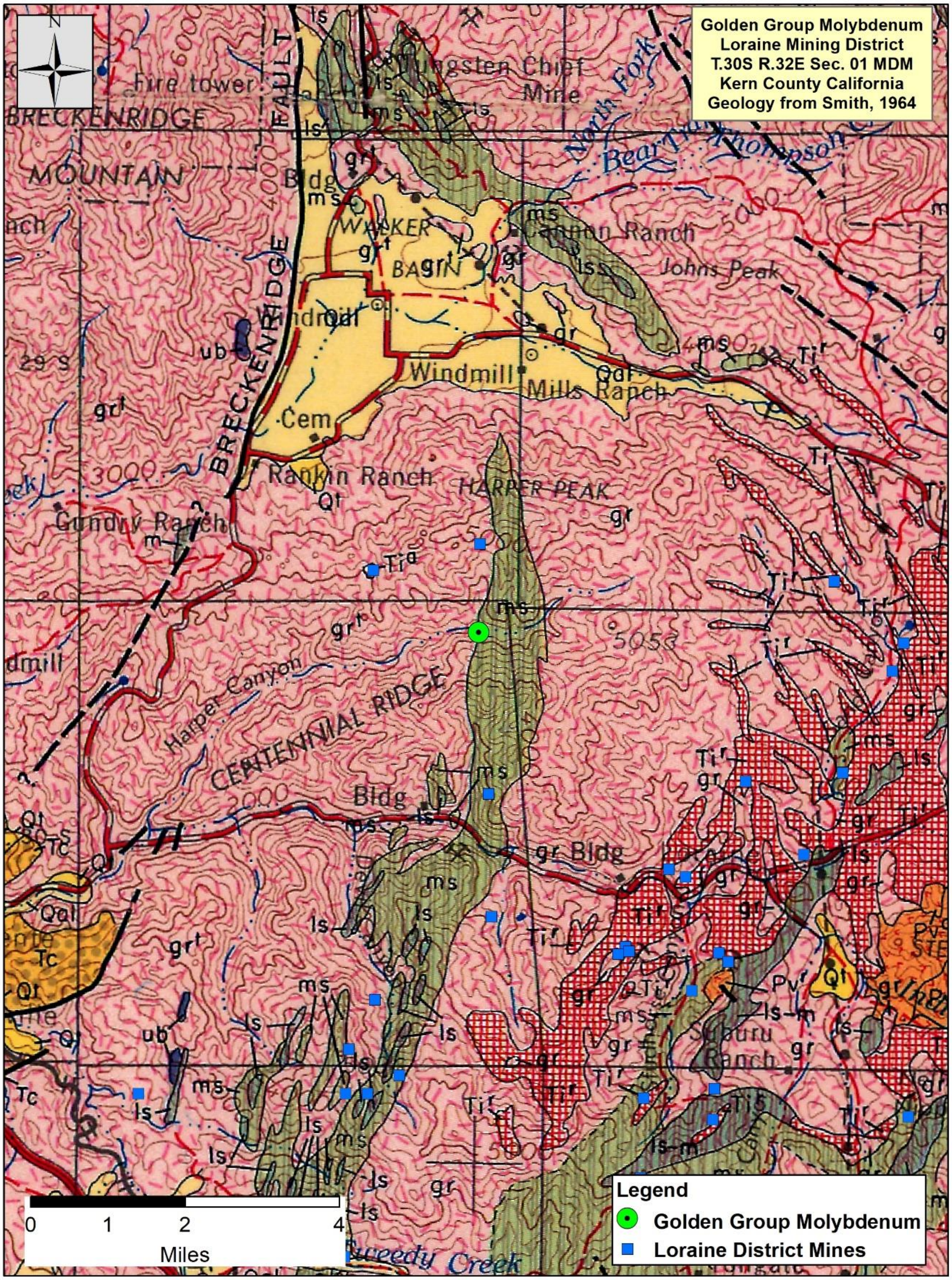

Figure 6. Area geologic map of the Golden Group Molybdenum Mine t. Scale 1:100,000.

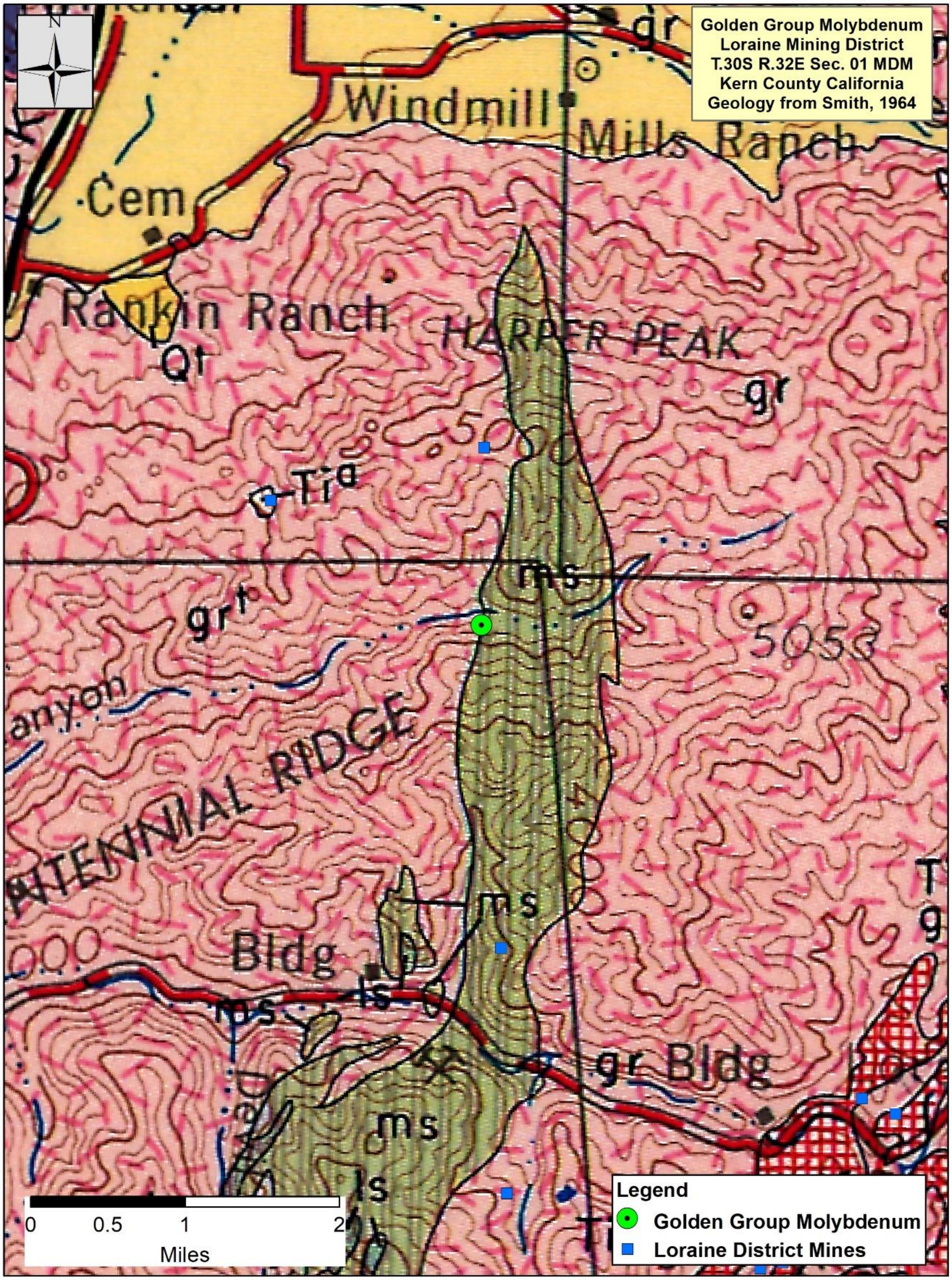

Figure 7. Detail of regional geology. Scale, 1:50K.

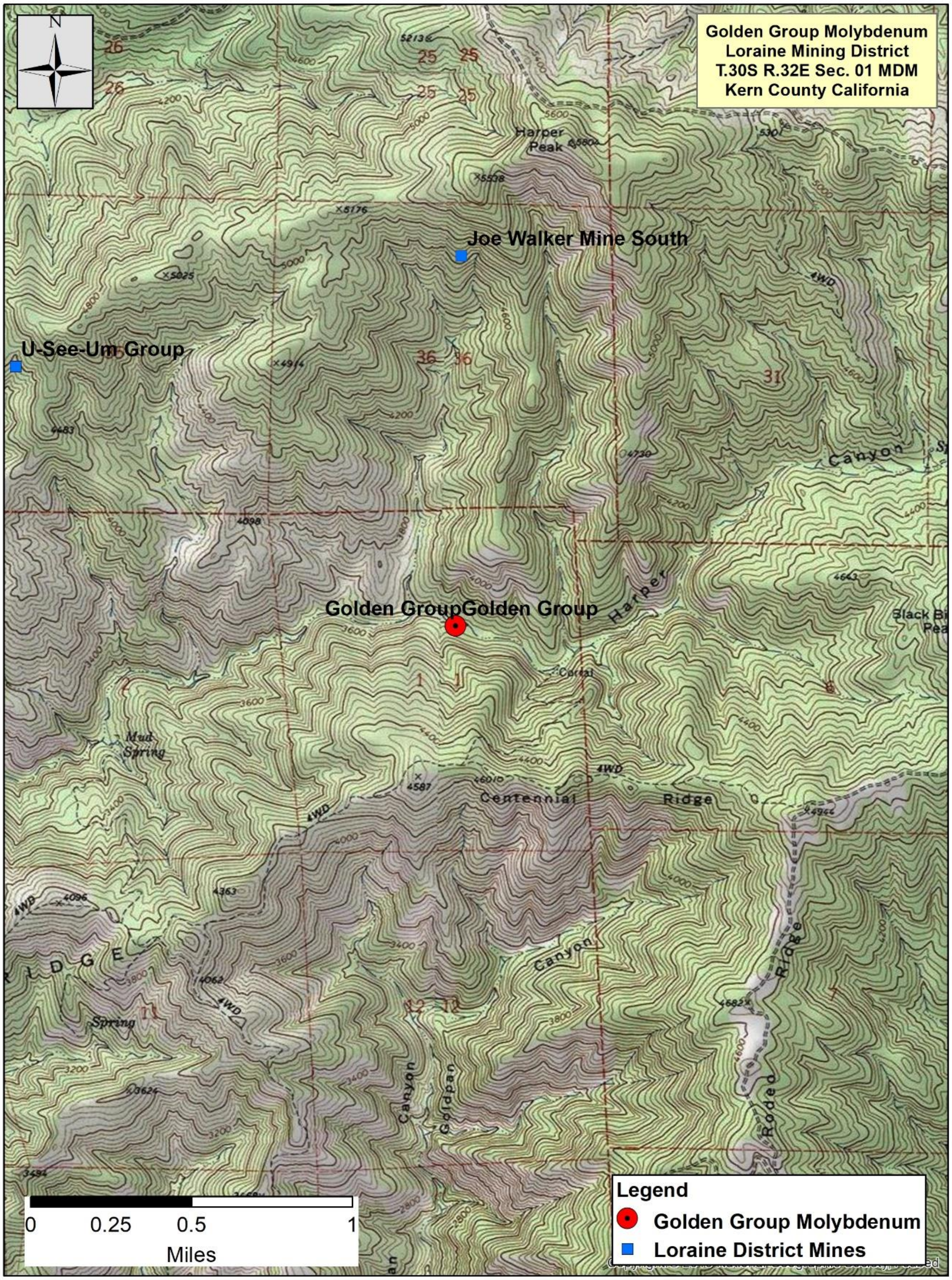

Figure 8. Location map of the Golden Group Molybdenum Mine. Scale 1:24,000.

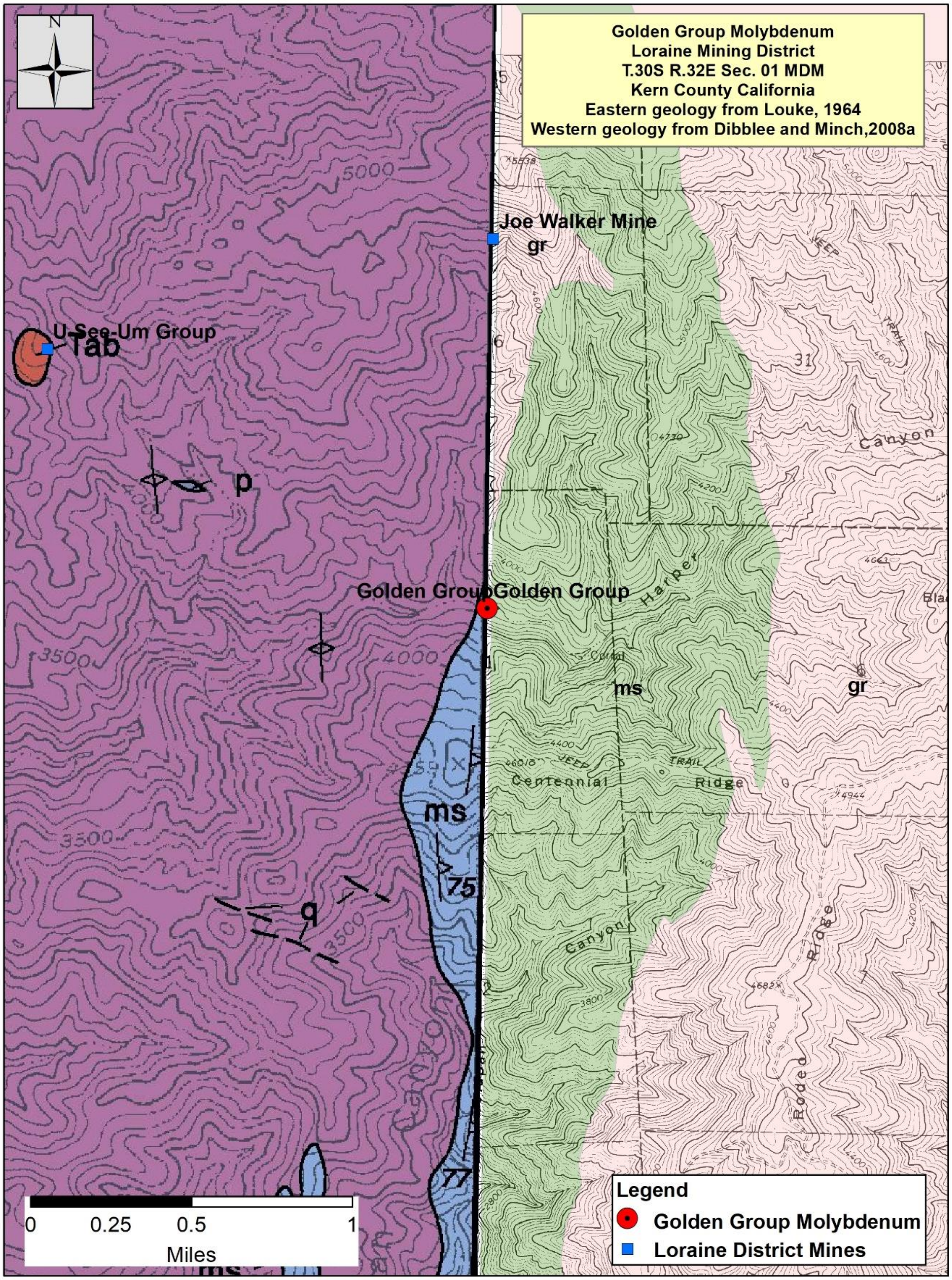

Figure 9. Geologic map of the Golden Group Molybdenum Mine. Scale 1:24,000.

Figure 10. Aerial photograph of the Golden Group Molybdenum Mine Prospect. From ESRI, 2021.Scale, 1:5,000