Black Hawk 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

31S 33E Sec. 05 MDM	35.26305	-118.46148 (MRDS, 2011)
	35.26309	-118.46152 (MRDS, 2011)

31S 33E Sec. 05, MDM (Tucker and others, 1949, p. 270).

Section 28, T.30S, R.33E., MD Comprises 8 claims in Caliente Canyon, 14 miles northeast of Caliente at an elevation of 3000 feet (Goodwin, 1957, p. 526, No, 128 table).

SW¼ Section 5, T. 31 S. R. 33 E., M.D.M., Loraine district, at the head of Stud-horse Canyon, 1 mile northeast of Eagle Peak. (Troxel and Moron, 1961, p. 345).

PREVIOUS NAMES
Blackhawk Mine

HISTORY
The first recorded production of ore from the Black-hawk mine was in 1944-45 when Pacific-Atlantic Metals Corporation of Pasadena mined and shipped about 200 tons of zinc-lead ore. A subsequent shipment of 14 tons of concentrates was made in 1951 by Ducor Mining Company after treatment at the Amalie mill in Loraine (Troxel and Morton, 1961, p. 345).

OWNERSHIP
J.A. Darnell, Bakersfield, CA (Tucker and others, 1949, p. 207).

J. A. Darnell, Bakersfield (1945). Operators: Pacific Atlantic Metals Corp., Pasadena (1945). Ducor Mining Co., R.C. Halton, 1104 West 99th Street, Los Angeles (1951)(Goodwin, 1957, p. 526, Table No. 128).

The last known owners were Vera C. and Ralph C. Hatton, 1104 W. 99th St., Los Angeles (1949) (Troxel and Morton, 1961, p. 345)

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).

BLACK HAWK MINE
Class D, Type 1 Lead Zinc Mine. Lead-zinc ore in a 4-6-foot vein at granite and limestone contact. Vein strikes north and dips 70 degrees west (Goodwin, 1957, p. 526 table No. 128)

NO. 7—LEAD AND ZINC
1957
EXPLANATION

CLASSIFICATION OF MINES BY TOTAL PRODUCTION OF LEAD-ZINC, POUNDS

A Over 10,000,000	B 1,000,000 to 10,000,000	C 100,000 to 1,000,000	D 0 to 100,000	ORE TYPES AND OCCURRENCES	PROVINCE OR DISTRICT
TYPE 1 DEPOSITS					
◉	◉	●	○	LEAD-ZINC-SILVER. Gold and minor copper minerals may be present. Occur mainly as replacement ore bodies in carbonate rocks.	Basin-Ranges and Mojave Desert
TYPE 2 DEPOSITS					
◉	◉	●	○	COPPER-ZINC. Gold, silver and lead minerals often present. Disseminated and massive sulfide ore in shear zones, veins and as flat-lying tabular bodies in old volcanic rocks.	Foothill Belt and Shasta District
				LEAD-COPPER-ZINC. Complex ores with gold and silver values often exceeding base metal value. Scheelite may be present. In contact zones and mesothermal fissure veins.	Sierra Nevada, eastern Mojave Desert and in other areas.

Numbers refer to tabulated list of text.

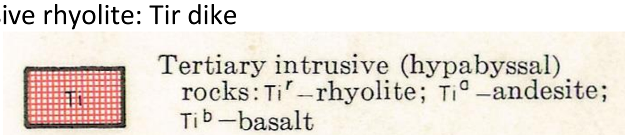
Irregular replacement of limestone near con act zone between metamorphic roof pendant and quartz diorite (Troxel and Morton, 1962, Table, p. 346).

At the Blackhawk mine site, a lead and zinc deposit has formed along and near the northwestern contact of a large roof pendant of metamorphic rocks in quartz diorite. The pendant trends N. 30° E., is several miles long, and averages 1 mile in width. At the south part of the mine area a rhyolite porphyry dike, a few tens of feet wide, has intruded the metasedimentary rocks along a zone parallel to and several feet southeast of the north-west edge of the pendant (Troxel and Morton, 1962, p. 345-346).

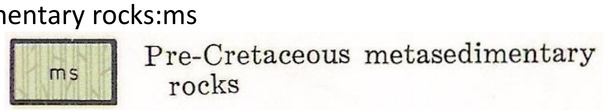
The deposit consists of irregular replacement bodies within a zone that strikes generally N. 45 ° E. and dips steeply northwest between the dike and the edge of the pendant. This zone is bounded on the southeast by the sharp contact of a fine-grained phase of the rhyolite dike, 1 to 2 feet wide, and on the northwest by a pale tactite body of undetermined thickness. Ore bodies appear to lie wholly within coarsely crystalline white limestone between the rhyolite and the tactite (Troxel and Morton, 1962, p. 346).

Smith (1964, Figures 7 and 8 this report) mapped the area of the Black Hawk Mine at a confluence of 2 rock types:

Tertiary hypabyssal intrusive rhyolite: Tir dike



Pre-Cretaceous metasedimentary rocks:ms



The mine is at the contact of the rhyolite dike and metasedaments.

Lourke (1965) mapped the area of the Black Hawk Mine in an area of Pre-Cretaceous metasediments near at or in Dacite dike (Da).

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 **Black Hawk** mine, 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).

BLACK HAWK MINE

Samples collected by the writers from the upper parts of the main ore body contained aurichalcite, sphalerite, cerussite, galena, and chalcopyrite; and lesser amounts of goslarite, zincite, malachite, and hemimorphite. The principal gangue minerals are calcite, quartz, pyrite, arsenopyrite, pyrrhotite, and hydrous iron oxides. Poor exposures probably have hindered prospecting for other ore bodies in the area (Troxel and Morton, 1962, p. 346).

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 [Ritter Ranch Barite] was being developed (Troxel and Morton, 1962, p. 42).

BLACK HAWK MINE

Developed by a 150-foot adit. Produced 1944-45 ore averaging 4.33% lead, and 7.15% zinc (Goodwin, 1957, p. 526, table No. 128 citing Tucker and Sampson, 1949, p. 238 and 270).

Total production through 1958 is about 35,000 pounds of zinc and 19,500 pounds of lead from less than 300 tons or ore. The ore averaged about 7 ½ percent zinc, about 4 percent lead, 0.5 percent copper, and 1 ounce of silver per ton (Troxel and Morton, 1962, p. 345).

The mine contains 400 to 500 feet of horizontal workings accessible by three adits. The upper and most south-westerly of them is a crosscut adit at the head of a small gulch. This adit was driven 50 feet N. 45 ° W. to the main ore deposit then S. 45 ° W. along its southeast edge. A stope 10 feet wide by 15 feet long was extended from the face of the crosscut and a shallow winze was sunk in the floor of the stope. Another and slightly larger stope was mined 25 feet southwest of the first stope. Two hundred feet northeast and about 100 feet below the upper adit, another crosscut adit was driven 115 feet N. 65 ° W. At a point 100 feet from the portal a 65-foot drift was extended several feet S. 65° W. then N. 65 ° W. Although the contact between rhyolite and metamorphic rocks was followed approximately down dip from the upper ore body, no ore was found. A third adit is several hundred feet north of the lower adit on the northwest slope of the ridge. It is a drift adit driven 100 feet S. 50° W. along a contact between quartz diorite and schist in what appears to be another ore zone. Some ore may have been mined from a vertical shaft of undetermined depth at the portal of the adit, but no ore was observed in the drift adit by the writers (Troxel and Morton, 1962, p. 346).

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Goodwin, J. G., 1957, Lead and Zinc in California, California Journal of Mines and Geology, Numbers 3 and 4, Volume 53, p. 353-724. See p. 526.

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Tucker, William B. and R. J. Sampson and G.B. Oakeshott, 1949, Mines and mineral resources of Kern County, California, California Journal of Mines and Geology, Volume 45, p, 203-297, see #230, p. 270 table.

Troxel, Bennie W. and Paul K. Morton, 1962, Mines and Mineral Resources of Kern County, California Division of Mines and Geology, County Report No. 1., 370 p. See p. 345.

MAPS

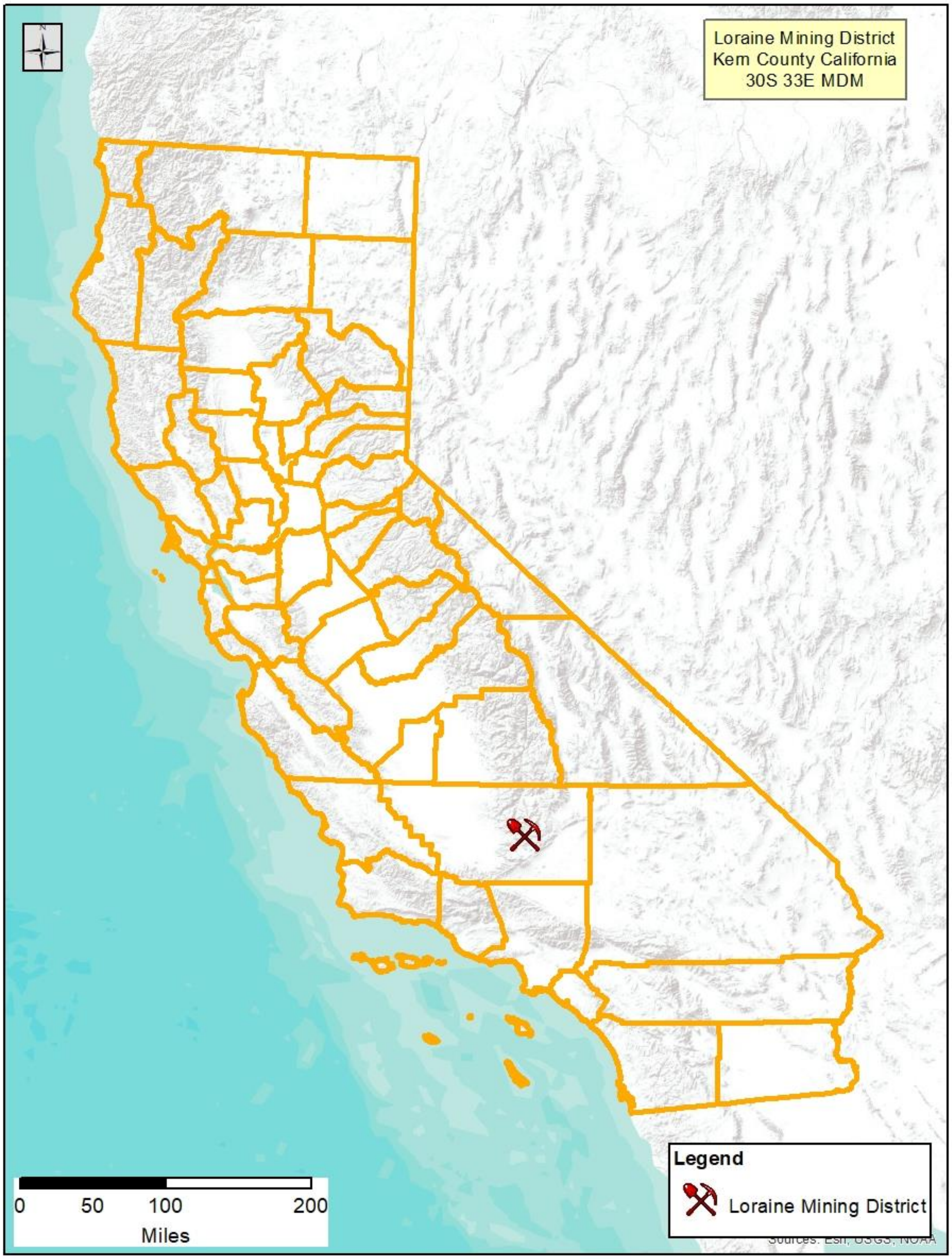

Figure 1. Location map of the Loraine Mining District in California.

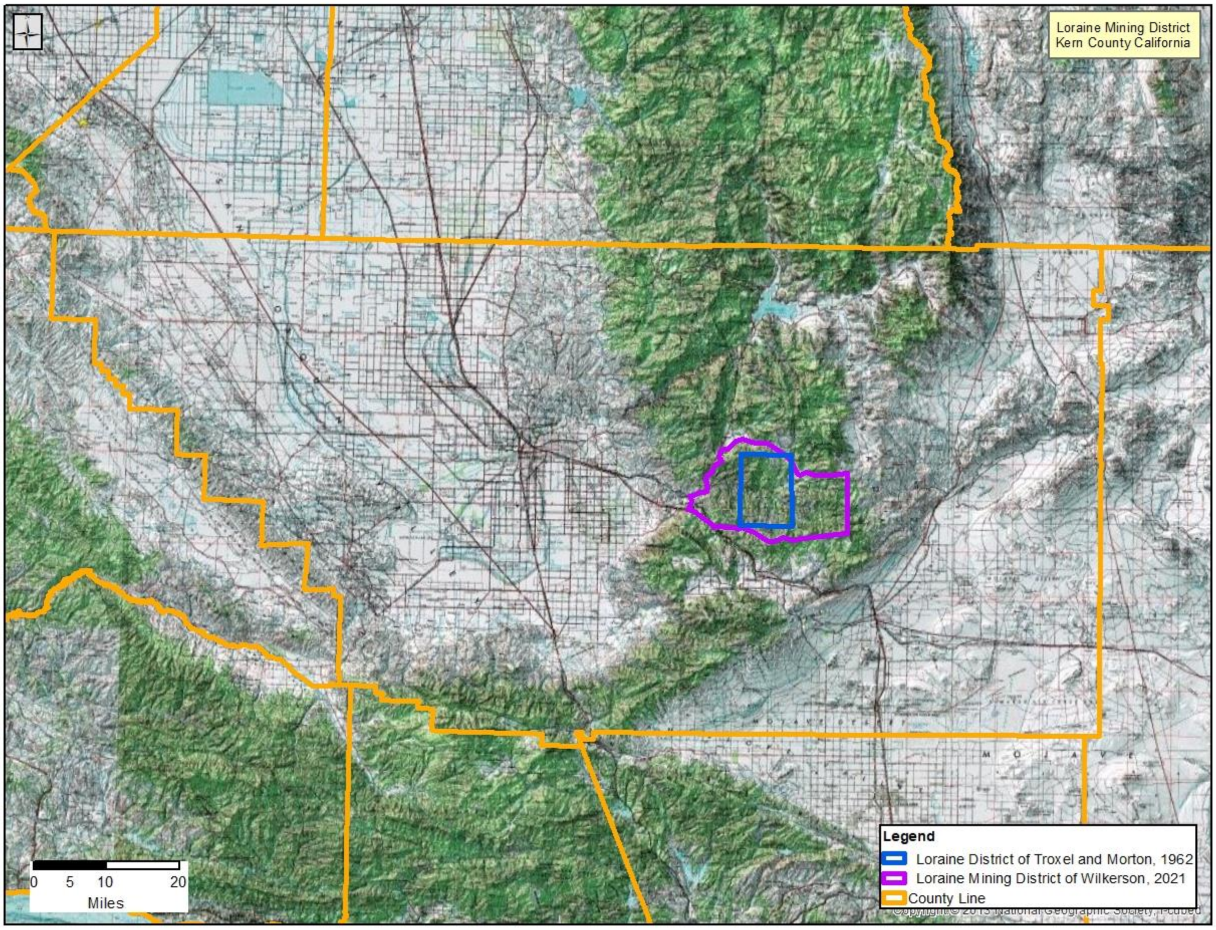

Figure 2. Location map of the Loraine Mining District in Kern County.

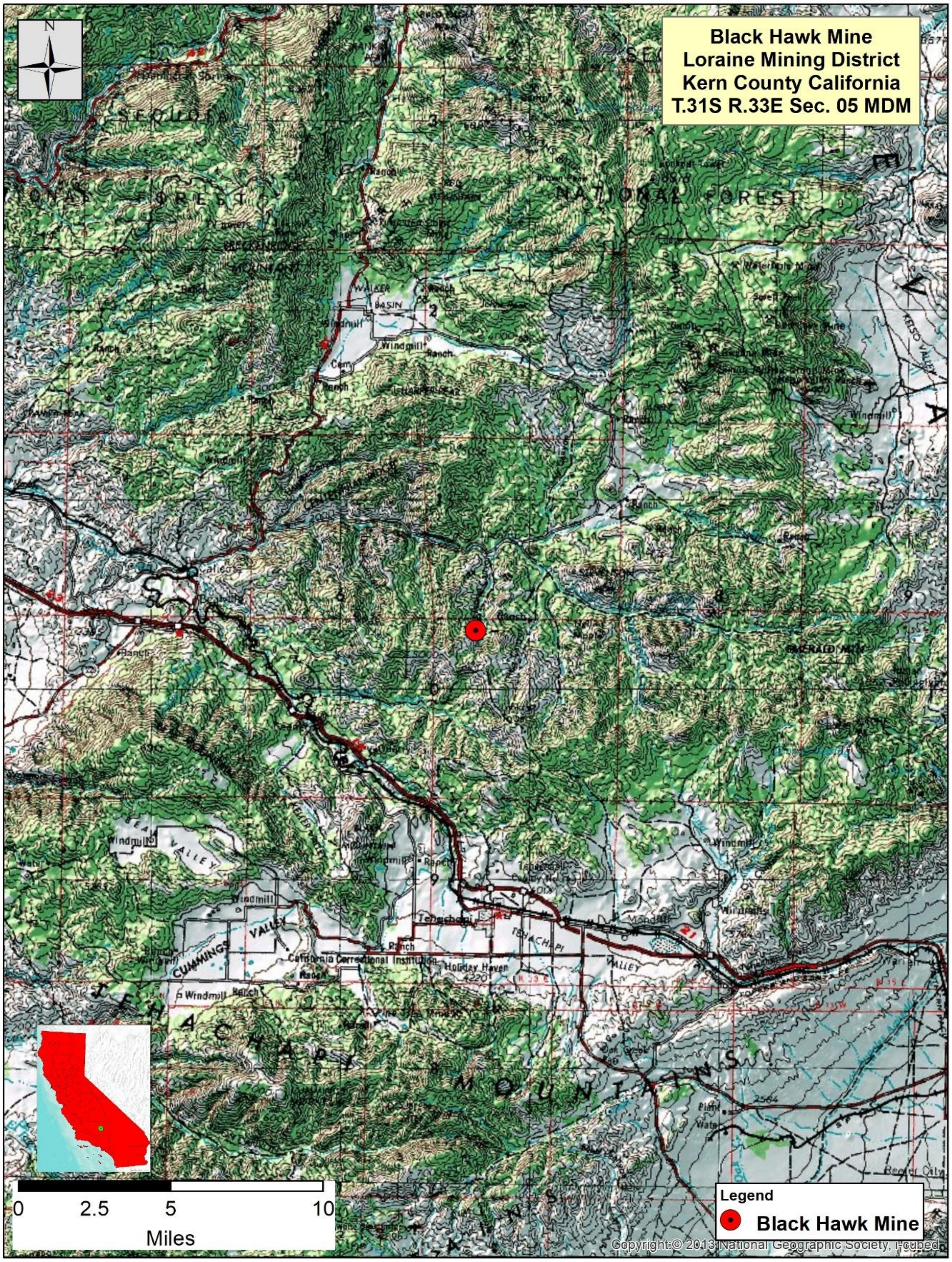

Figure 3. Regional topographic map of the Black Hawk Mine. Scale 1:250K.

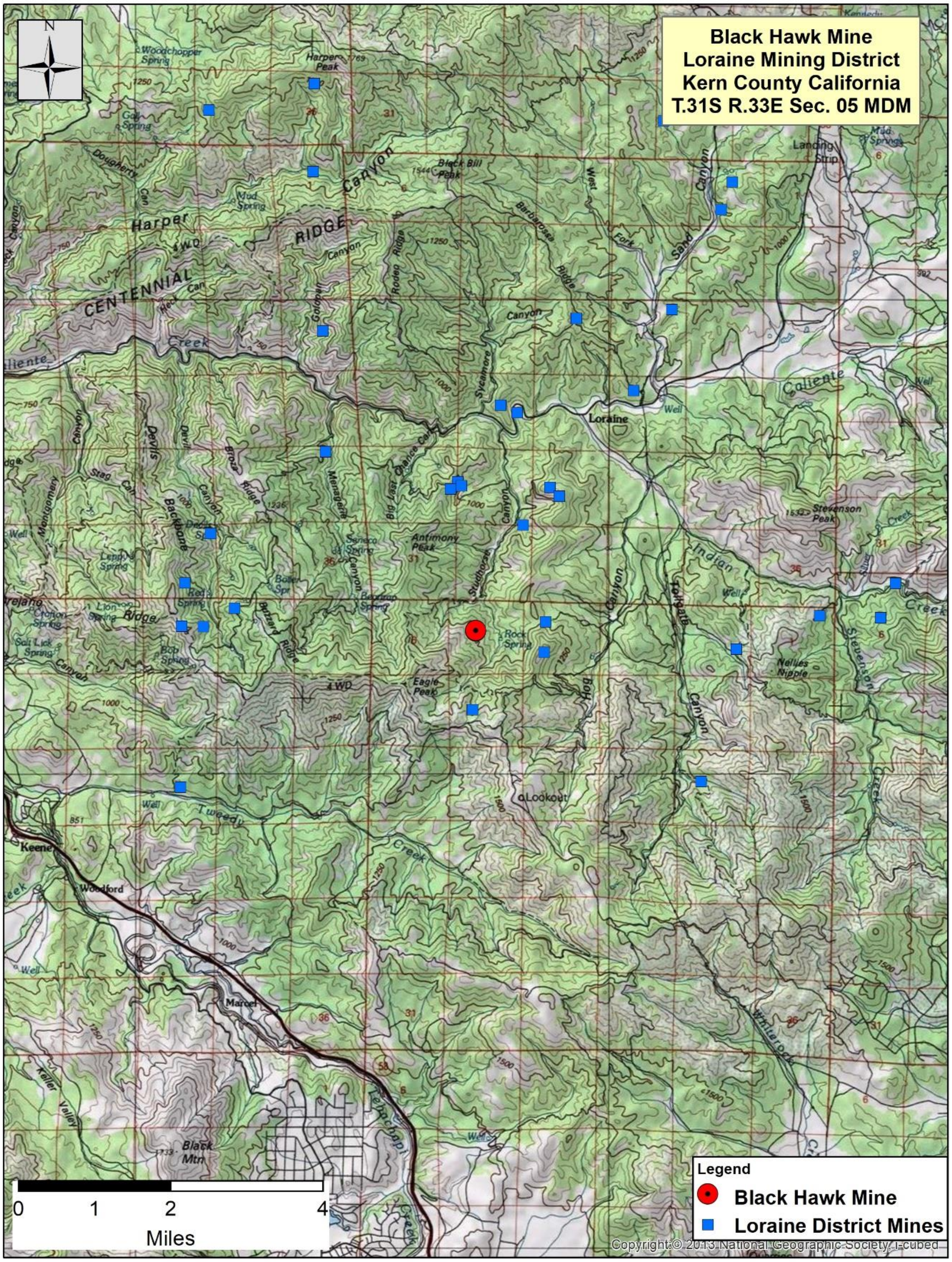

Figure 4. Topographic map of the Black Hawk mine and surrounding areas. Scale 1:100K

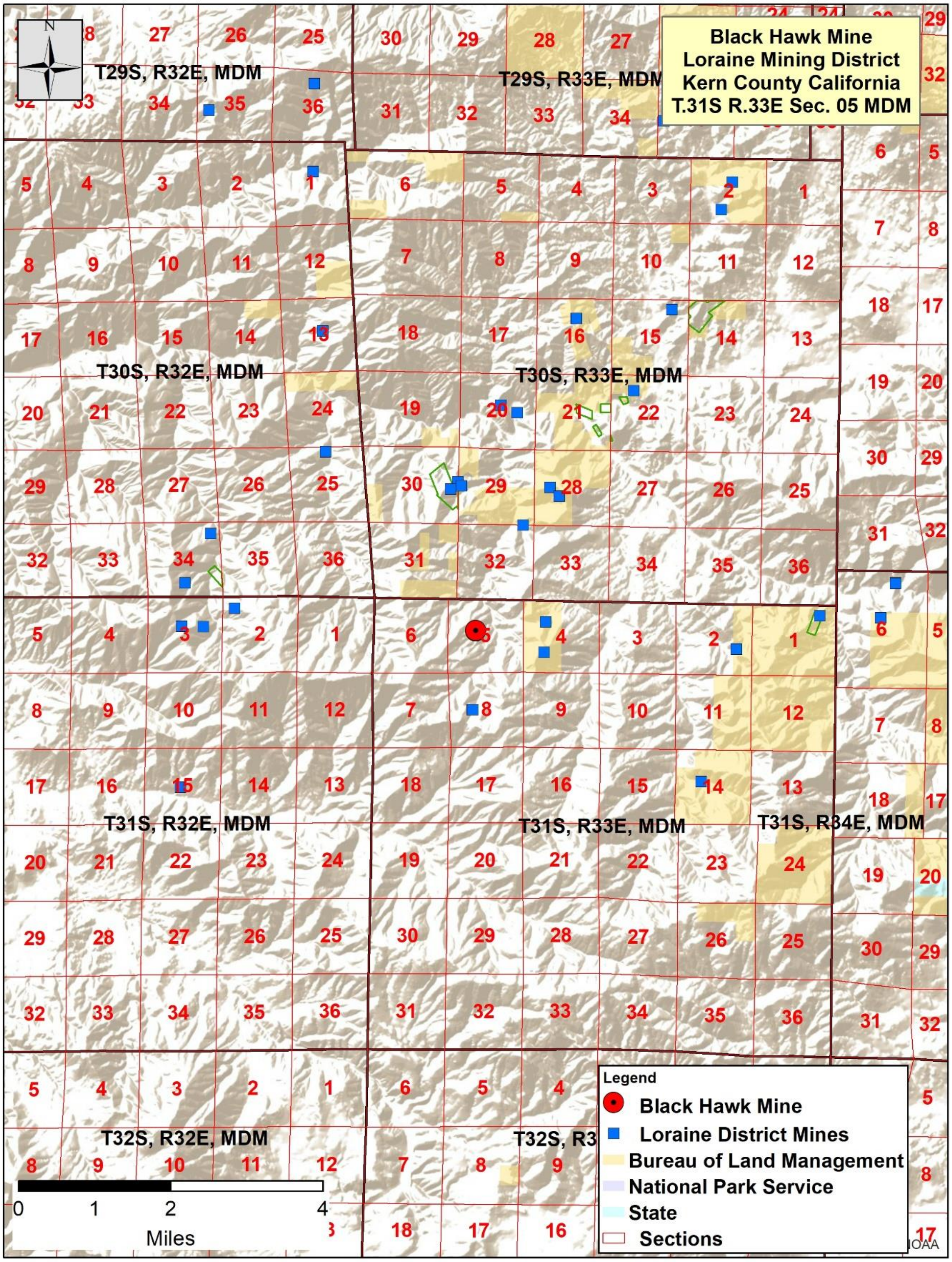

Figure 5. Land status map for the Black Hawk Mine. Data from USBLM.

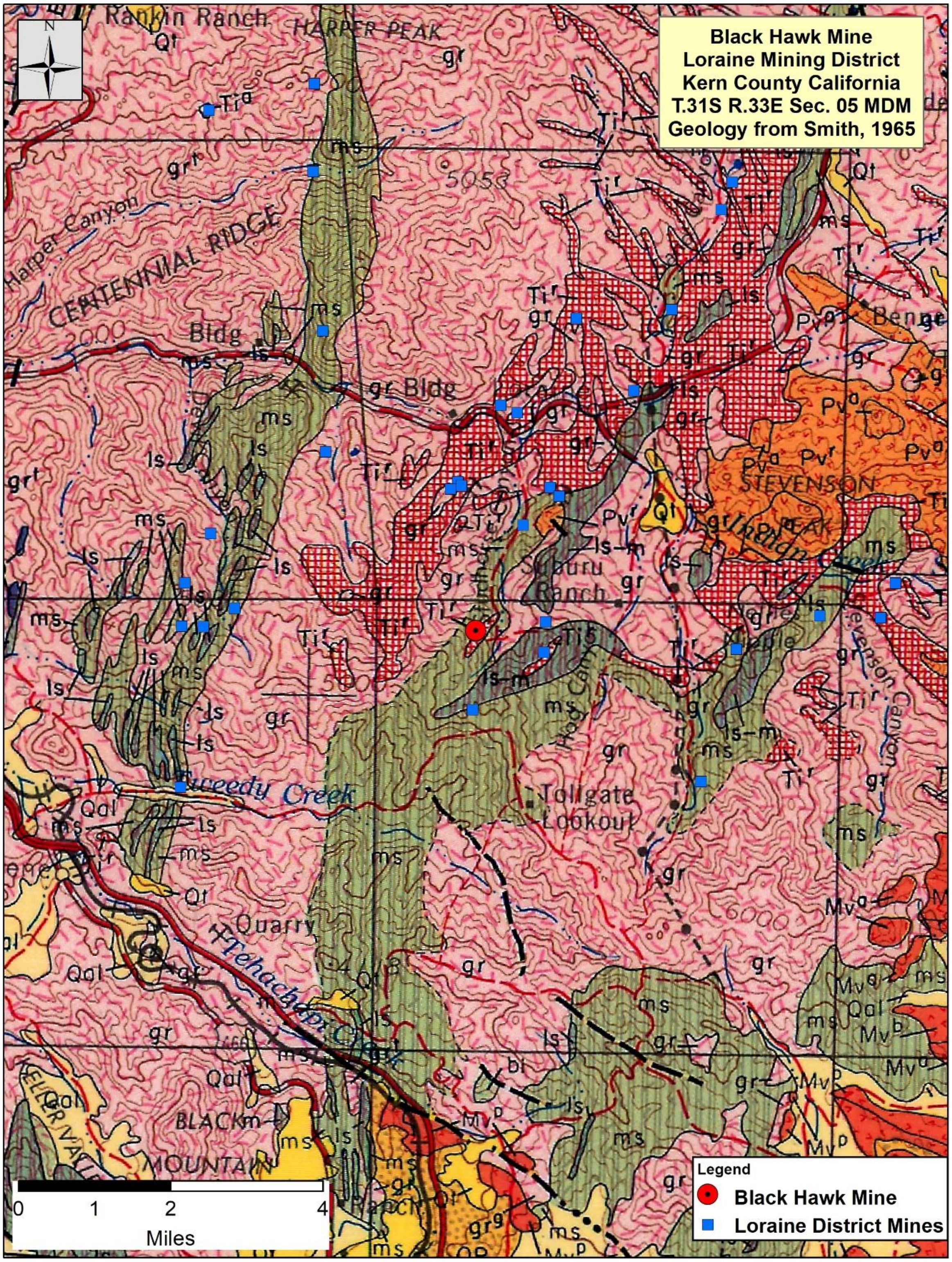

Figure 6. Area geologic map of the Black Hawk Mine. Scale 1:100,000.

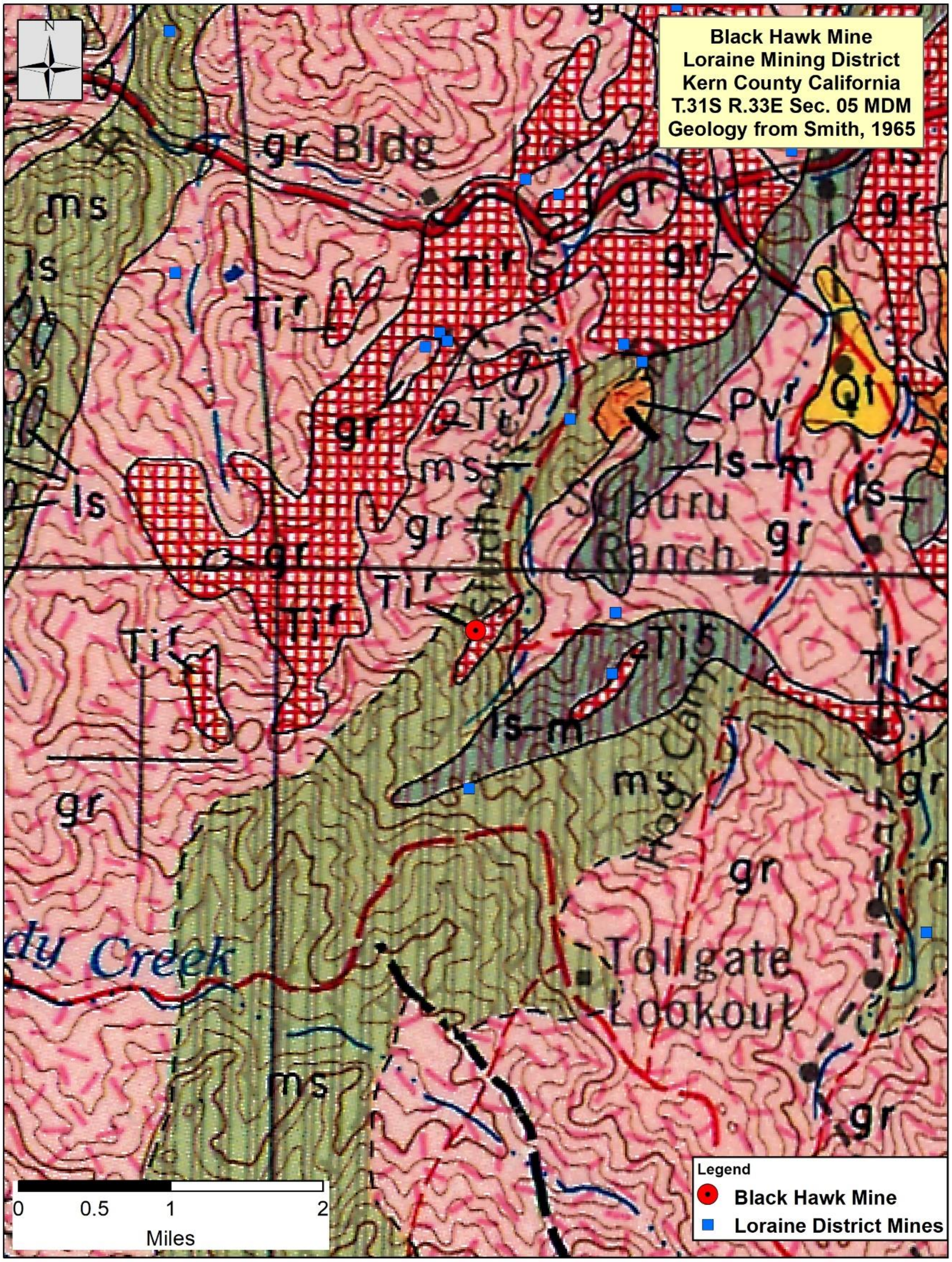

Figure 7. Detail of regional geology. Scale, 1:50K.

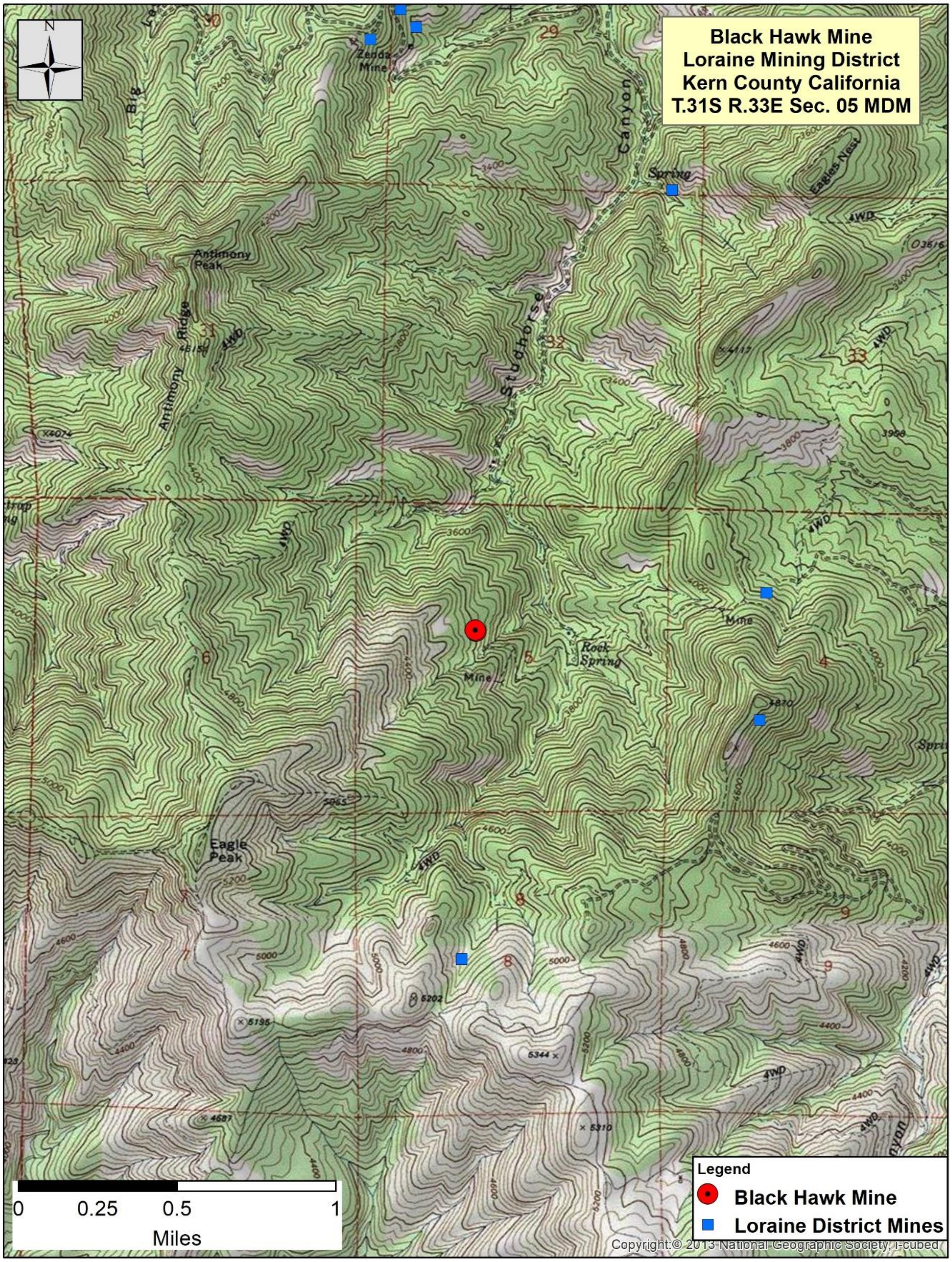

Figure 8. Location map of the Black Hawk Mine. Scale 1:24,000.

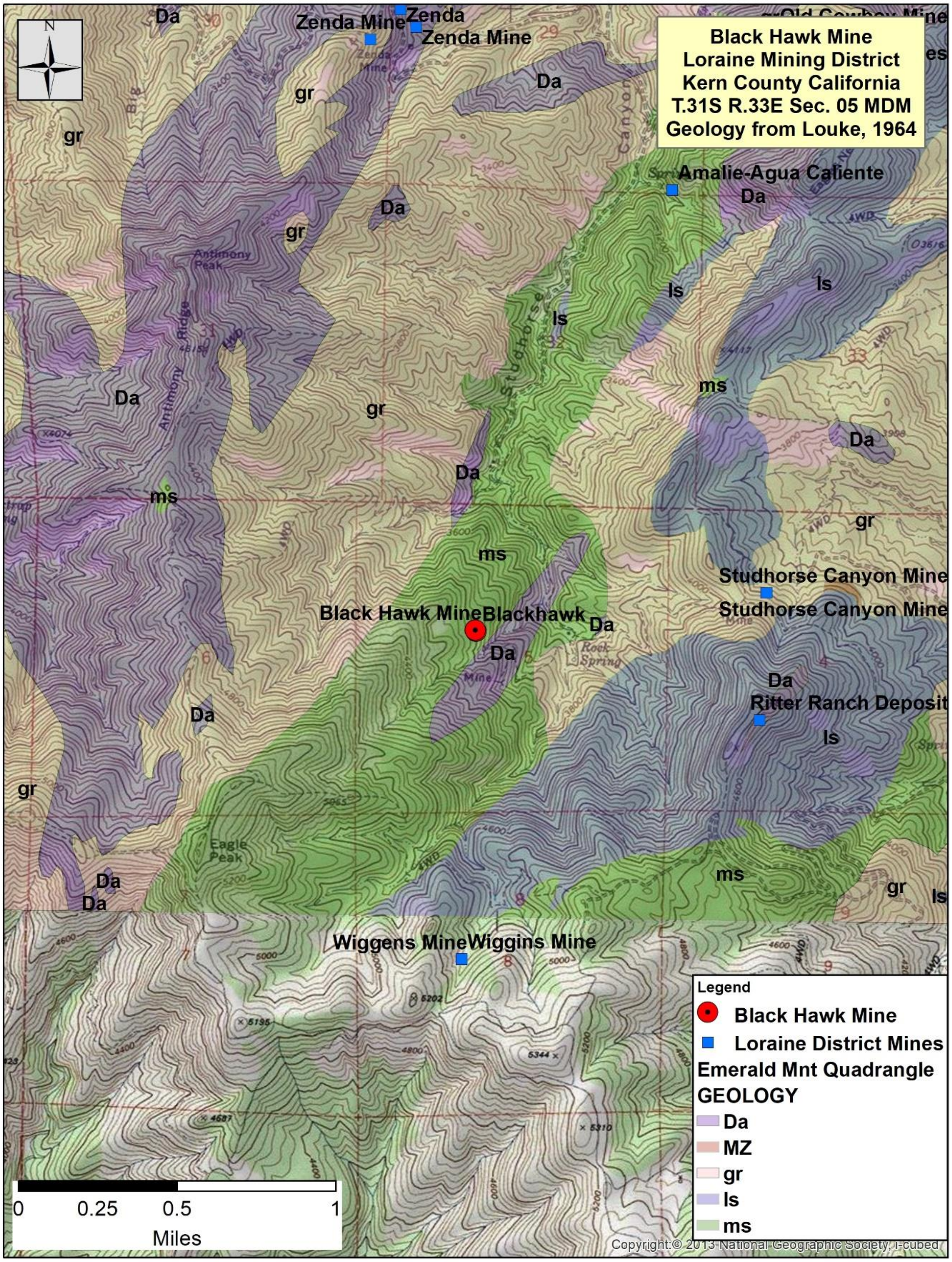

Figure 9. Geologic map of the Black Hawk Mine. Scale 1:24,000.

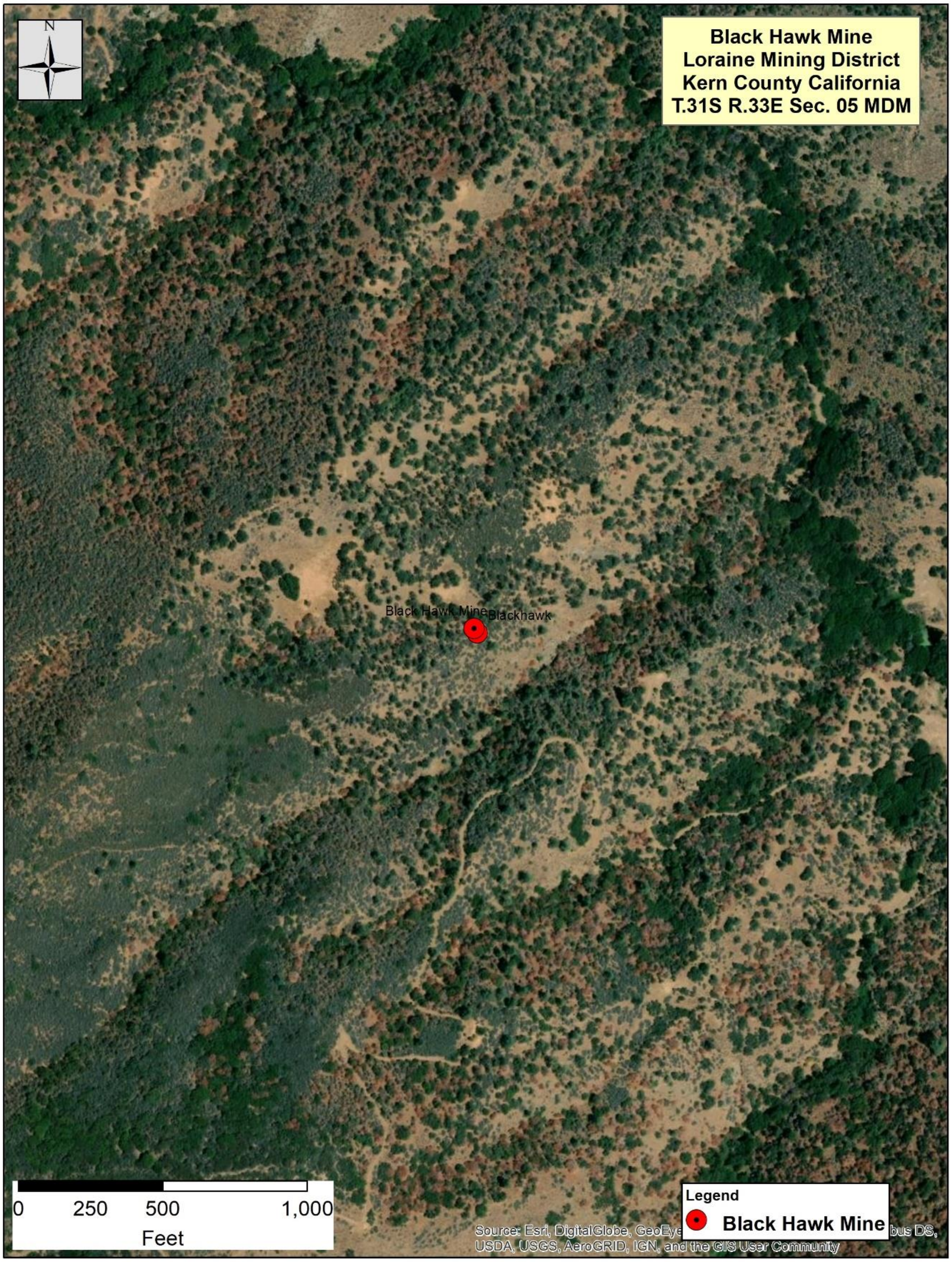

Figure 10. Aerial photograph of the Black Hawk Mine. From ESRI, 2021.Scale, 1:5,000

Figure 11. Aerial photograph of the Black Hawk mine. Scale 1:2000.