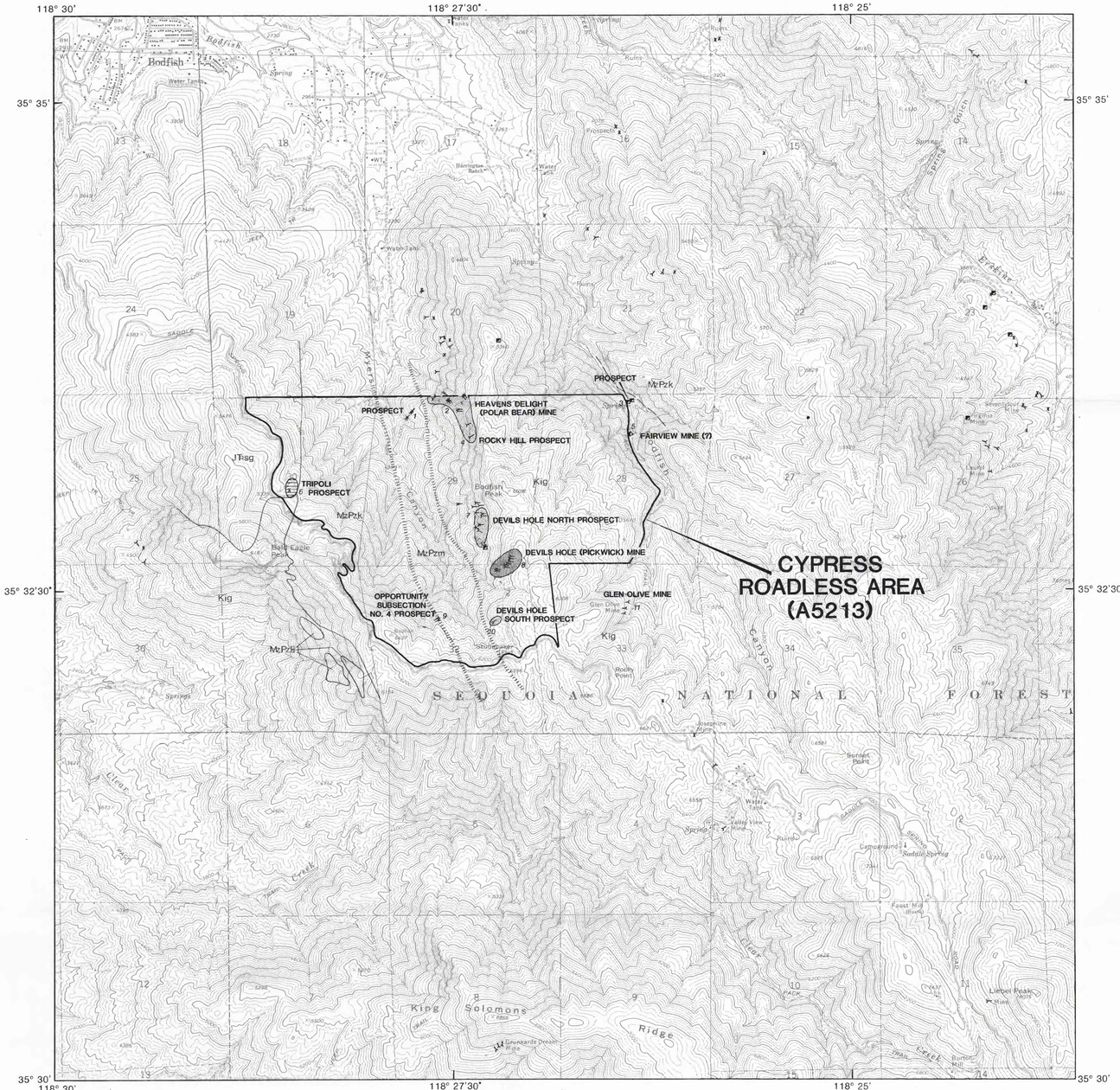
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-1532-A



EXPLANANTION

- AREA OF MODERATE POTENTIAL FOR GOLD RESOURCES
- AREA OF LOW POTENTIAL FOR GOLD RESOURCES
- AREA OF LOW POTENTIAL FOR TUNGSTEN RESOURCES
- MINE OR PROSPECT--Number refers to table 1 in pamphlet
- Adit--Includes caved adits outside of roadless area
- Caved adit
- Prospect pit
- Shaft
- CONTACT--Dashed where approximately located; hachured where gradational
- APPROXIMATE BOUNDARY OF ROADLESS AREA

CORRELATION OF MAP UNITS

Kig	CRETACEOUS
JTrsg	JURASSIC AND (OR) TRIASSIC
MzPzk	MESOZOIC AND PALEOZOIC(?)
MzPzm	

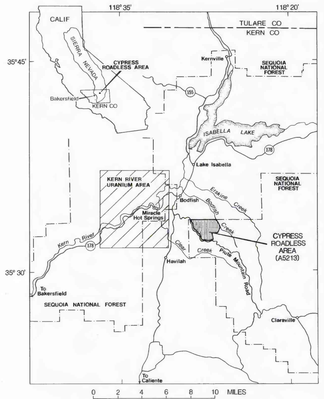
DESCRIPTION OF MAP UNITS

Kig ISABELLA GRANODIORITE OF MILLER (1931) (CRETACEOUS)--Leucocratic fine- to coarse-grained, inequigranular granodiorite, locally varying in composition from granodiorite through tonalite to hornblende diorite. Texture varies locally from equigranular to coarsely porphyritic with zoned megacrysts of potassium feldspar. Foliation is weakly to well developed and is defined by alinement of inclusions and mafic minerals. Elongate or discoidal inclusions of diorite occur throughout the granodiorite, but vary locally in concentration and size. In places the granodiorite is intruded by late-stage pegmatite and aplite dikes. Typical exposures of this unit are deeply weathered and covered with a veneer of grus. Contacts with the Kernville Series of Miller (1931) vary from sharp and well defined, to poorly defined transitional zones of assimilated metasedimentary rocks. One zone of mixed granodiorite and metasediments that is up to 0.4 mi wide has been mapped separately. Eleven K-Ar age determinations on biotite from the Isabella Granodiorite north of the Kern River have yielded an average age of 83 m.y., or Late Cretaceous (Evernden and Kistler, 1970; Bergquist and Nitkiewicz, 1982)

JTrsg SUMMIT GABBRO OF MILLER AND WEBB (1940) (JURASSIC AND (OR) TRIASSIC)--Fine- to medium-grained, inequigranular to porphyritic, mesocratic hornblende gabbro. Rock is composed chiefly of euhedral phenocrysts of hornblende in a matrix of calcic plagioclase with lesser amounts of euhedral sphene, very red biotite, apatite, zircon, and magnetite. Olivine may constitute up to 15 percent of the rock. Locally, the gabbro is distinctly layered with elongate crystals of hornblende oriented perpendicular to layering planes

Mz Pz k KERNVILLE SERIES OF MILLER (1931), UNDIVIDED (MESOZOIC AND PALEOZOIC(?))--Well-foliated, locally tightly folded, laterally continuous metasedimentary rocks that consist mostly of interbedded quartzite and subordinate mica schist in Cypress Roadless Area. Outcrops occur as roof pendants, septa, and xenoliths in younger intrusive rocks. Isolated xenoliths occur in the mixed zone between this unit and the Isabella Granodiorite of Miller (1931). The quartzites, which are typically light gray to bluish gray on fresh surfaces and iron stained to reddish brown on weathered surfaces, are fine grained and mostly massive, but foliated in places with bands of biotite. The quartzites are highly recrystallized and vary from nearly pure quartzite to micaceous quartzite containing feldspar, biotite, muscovite, magnetite, and traces of apatite and zircon. The mica schists are locally gneissic near contacts with younger intrusive rocks, and range in composition from quartz-muscovite-biotite schist to hornblende-biotite-quartz-plagioclase schist. Contacts with intrusive rocks vary from sharp to zones of mixed rocks and zones of migmatite. Mineral assemblages in tactite include calcite, wollastonite, epidote, topaz(?), and red garnet. No fossils were found in the metasedimentary rocks exposed in the roadless area. However, Late Triassic to Early Jurassic mollusks have been reported from metasedimentary rocks of the Kernville Series 8 mi east-northeast of the roadless area (Saleeby and others, 1978).

MzPzm MIXED ROCKS (MESOZOIC AND PALEOZOIC(?))--Complex zone of mixed plutonic rocks and dikes of the Isabella Granodiorite of Miller (1931), schist, quartzite, hornfels, and tactite of the Kernville Series of Miller (1931), and migmatite. Granodiorite occurs in thin parallel stringers and irregular patches several feet across. Quartzites are gray, micaceous, locally contain bands of biotite, and have granoblastic textures. Schists are fine grained and contain up to 45 percent biotite. Hornfels is quartzo-feldspathic with a fine to very fine texture



Index map showing location of Cypress Roadless Area, Kern County, California.

STUDIES RELATED TO WILDERNESS

The Wilderness Act (Public Law 88-577, September 3, 1964) and related acts require the U.S. Geological Survey and the U.S. Bureau of Mines to survey certain areas on Federal lands to determine their mineral resource potential. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a mineral resource potential survey of the Cypress Roadless Area in the Sequoia National Forest, Kern County, California. Cypress Roadless Area (A5213) was classified as a further planning area during the Second Roadless Area Review and Evaluation (RARE II) by the U.S. Forest Service, January 1979.

SUMMARY

Cypress Roadless Area encompasses 3 sq mi (1,949 acres) in Sequoia National Forest approximately 30 mi east-northeast of Bakersfield, in the southern Sierra Nevada, Kern County, California. A mineral resource appraisal of the roadless area was conducted by the U.S. Geological Survey and the U.S. Bureau of Mines in 1980-1982. Studies included field checking of a previously published geologic map and a reconnaissance geochemical survey by the Geological Survey, and a search of mining records and examination of mines, prospects, and mineralized areas by the Bureau of Mines.

These studies indicate that Cypress Roadless Area has: (1) low to moderate potential for possible gold and associated silver resources; and (2) low potential for possible tungsten resources in tactite. There are no indications for the occurrence of coal, oil, gas, or geothermal energy in the roadless area.

GEOLOGY

The geology of Cypress Roadless Area is typical of the southern Sierra Nevada. Intensely deformed pre-Middle Jurassic metamorphic rocks occur as roof pendants scattered throughout an intrusive country rock of predominantly Upper Cretaceous granite rocks. Scattered gabbroic intrusions of probable Triassic or Jurassic age are also present in the region.

The oldest rocks in the region are metamorphic rocks of the Kernville Series of Miller (1931). The Kernville Series includes a variety of metasedimentary and metavolcanic rocks that occur in roof pendants in the southern end of the Sierra Nevada batholith. In Cypress Roadless Area, the Kernville is dominantly quartzite with lesser amounts of schist. Strikes are generally parallel or subparallel to the regional trend of local roof pendants; dips are steep to vertical. Contacts with the Summit Gabbro of Miller and Webb (1940) and Isabella Granodiorite of Miller (1931) vary from sharp to gradational zones of mixed intrusive and metasedimentary rocks. The age of the Kernville Series is Paleozoic(?) to pre-Middle Jurassic, but the lack of fossils in the area prevents a more precise age determination. Saleeby and others (1978, p. 322) reported Late Triassic to Early Jurassic mollusks from another roof pendant approximately 8 mi east-northeast of the roadless area.

Most of the plutonic rocks of the Sierra Nevada batholith are granitic, but a few small gabbroic plutons of probable Triassic or Jurassic age occur throughout the region. A small area of the Summit Gabbro of Miller and Webb (1940) is exposed in the northwest part of the roadless area.

The Upper Cretaceous Isabella Granodiorite of Miller (1931) is the most extensive intrusive rock in the roadless area, and varies in composition from granodiorite through tonalite to hornblende diorite. Typical exposures of granodiorite are deeply weathered and covered with a veneer of grus. A shallowly eastward-dipping system of gold bearing quartzo-feldspathic to milky-quartz dikes and veins occurs in the granodiorite in a north-trending fault system in Myers Canyon (Capstick, 1983).

GEOCHEMISTRY

The geochemical survey of Cypress Roadless Area is based on chemical analyses of 33 rock samples, 34 minus-60-mesh stream-sediment samples, and 33 nonmagnetic heavy-mineral-concentrate samples (Sutley and others, 1983; Chaffee and others, 1983).

Rock samples

Nine of the 33 rock samples collected by the Geological Survey contained anomalous concentrations of arsenic, gold, or silver. The anomalies appear to be related to quartz-vein mineralization, rather than to the primary lithology of the host rocks. One hundred seventy-eight rock samples were collected at 11 mines and prospects by the Bureau of Mines. Gold (0.005 oz per ton or greater) was detected in 34 percent of the 123 chip samples collected; 28 percent contained between 0.005 and 0.01 oz gold per ton and 6 percent contained 0.01 to 1.09 oz gold per ton.

Stream-sediment and concentrate samples

Anomalous concentrations of elements possibly related to mineralization are present in both stream-sediment and nonmagnetic heavy-mineral-concentrate samples from throughout the study area. Gold and silver anomalies in stream sediments in upper Bodfish Canyon probably are due to contamination from the Glen Olive mine and other prospects, but they may also be indications of additional mineralized areas. Slightly anomalous concentrations of gold and silver in Myers Canyon are related to the system of quartzo-feldspathic dikes and veins that is exposed on the east side of the canyon.

Restricted anomalies for one or more of the elements antimony, arsenic, copper, gold, or silver in heavy-mineral-concentrate samples from drainages on the west side of Bodfish Canyon may be the result of contamination from mining and milling activity in the Glen Olive mine area. Geologically these anomalies appear to be related to mineralized quartzo-feldspathic dikes and veins that predominantly occur in the Isabella Granodiorite.

Elements that are characteristic of metasomatic contact-type tungsten mineralization (B, Bi, Mo, Pb, Sn, W) were found throughout the area in many of the nonmagnetic heavy-mineral concentrate samples. However, the more intense of the anomalies may be due to contamination. Additional weaker anomalies may indicate areas of either (1) contact-type mineralization, although limestone is generally rare in the area, or (2) quartz-vein mineralization that may be more widespread throughout the area. The sources of these minor anomalies have not been identified.

On the basis of distribution and magnitude of geochemically anomalous samples, the resource potential in the roadless area is low to moderate for precious metals and low for tungsten.

MINES AND MINING DISTRICTS

Gold

Lode gold has been produced from several mines along the ridge of Isabella Granodiorite that extends through, and southeast of, the roadless area. At the Glen Olive mine, just outside of the area, free-milling gold was produced from two quartz veins that strike northwest and dip northeast (Troxel and Morton, 1962, p. 151).

Numerous prospect pits and adits are present on the west-facing slope of Myers Canyon, and at least two properties (Pickwick and Polar Bear mines) had a combined production totaling at least 861 oz gold (Capstick, 1983). At what may be the old Fairview mine near the northeastern corner of the roadless area are workings consisting of a 450-ft-long haulage(?) tunnel and caved incline. Limited, although unrecorded, production is also suggested by the extent of these workings (Capstick, 1983).

Tungsten

Scheelite, a tungsten mineral, has been produced from quartz veins and from tactite deposits in the Kernville Series in roof pendants that are located immediately east and west of the roadless area. The Tripoli prospect, the only tungsten prospect in Cypress Roadless Area, is on the west side of the area at the contact between the Kernville Series and the Summit Gabbro. No production has been recorded from the Tripoli prospect and none is suspected (Troxel and Morton, 1962; Capstick, 1983).

Antimony

Stibnite and, locally, native antimony have been mined from quartzose bodies in shear zones that cut granitic rocks or metamorphosed sedimentary rocks east, west, and south of the roadless area, in the Erskine Creek, Clear Creek, and Piute Mountains mining districts, respectively (Troxel and Morton, 1962). A minor amount of antimony ore was produced from the Opportunity Subsection No. 4 prospect.

Uranium

Uranium was first discovered in 1954 in the Kern River uranium area (MacKevett, 1960) near Miracle Hot Springs, 3 mi west-northwest of Cypress Roadless Area (index map). The uranium minerals are secondary and occur in small deposits that are erratically distributed along faults and fracture systems in the Isabella Granodiorite.

ASSESSMENT OF MINERAL RESOURCE POTENTIAL

Gold

Lode gold has been produced from the Glen Olive mine and other mines along the ridge of Isabella Granodiorite that extends through, and southeast of, the roadless area. The area has been extensively prospected and at least 30 adits are present in the roadless area. A few, such as the Polar Bear and Pickwick mines, have had limited production (Capstick, 1983). Analyses of samples from these workings suggest sporadic distribution of the gold, a characteristic apparently shared by similar prospects and mines in the region.

Within the area that is geologically favorable for the occurrence of gold-bearing quartz veins, four areas are identified that might have mineral resource potential. Of these areas, one has moderate potential and three have low potential for gold resources with accessory silver. There is no evidence of a potential for gold resources at other prospects in the roadless area. Resource potential at the Glen Olive mine, however, is high (Capstick, 1983).

Anomalous concentrations of gold and silver were recovered from stream-sediment and heavy-mineral-concentrate samples from Myers Canyon in the roadless area and from areas draining Isabella Granodiorite outside the roadless area. However, the extensive bedrock exposures and concomitant lack of gravel accumulations in Myers Canyon due to the steep terrain precludes even a low potential for heavy-metal placer resources in the roadless area.

Tungsten

Metamorphic rocks of the Kernville Series in roof pendants east and west of the roadless area have yielded small amounts of tungsten from both tactite and quartz-vein type deposits. Outcrops of metamorphosed limestone are rare and of limited extent in the roadless area, although a minor amount is present at the Tripoli prospect. No tactite was observed in the mixed zone of metamorphic and granitic rocks in Myers Canyon. Stream-sediment and heavy-mineral-concentrate samples from areas draining exposures of the Kernville Series contain slightly anomalous concentrations of elements related to tungsten-type mineralization, but none of these anomalies appears to be highly significant. On the basis of this evidence, Cypress Roadless Area has low potential for the occurrence of tungsten resources.

Antimony

Stibnite and, locally, native antimony have been produced from mining districts that are immediately east, west, and south of the roadless area. Two tons of antimony ore were mined in the roadless area in Myers Canyon at the Opportunity Subsection No. 4 prospect. The deposit has been depleted and no further resources remain (Capstick, 1983).

Uranium

The Isabella Granodiorite locally contains abnormal amounts of uranium in the Kern River uranium area (MacKevett, 1960) about 3 mi west-northwest of the roadless area. No anomalous uranium was detected in the rock or stream-sediment samples that were analyzed for this study, and there is no indication of uranium resources in the roadless area.

Geothermal energy

Hot springs are locally present in the southern Sierra Nevada, and are usually associated with faults. The closest hot springs are about 3 mi west-northwest of the roadless area at Miracle Hot Springs. The absence of hot spring activity in Cypress Roadless Area suggests that no potential exists here for geothermal energy.

Other commodities

Marble is present in the Kernville Series in roof pendants both east and west of the roadless area. Because it comprises a very small part of the metamorphic rocks in Cypress Roadless Area, marble is not considered a potential resource here.

Stone suitable for various construction purposes is present in the roadless area. However, because transportation is a major factor in the production of this high-bulk, low-unit-cost commodity, deposits in the roadless area cannot compete favorably with similar deposits closer to populated areas.

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MINERAL RESOURCE POTENTIAL MAP OF THE CYPRESS ROADLESS AREA, SOUTHERN SIERRA NEVADA, CALIFORNIA

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