

**MINERAL RESOURCE POTENTIAL OF PART OF THE ORLEANS MOUNTAIN
ROADLESS AREA, SISKIYOU AND TRINITY COUNTIES, CALIFORNIA**

SUMMARY REPORT

By

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STUDIES RELATED TO WILDERNESS

Under the provisions of the Wilderness Act (Public Law 88-577, September 3, 1964) and related acts, the U.S. Geological Survey and the U.S. Bureau of Mines have been conducting mineral surveys of wilderness and primitive areas. Areas officially designated as "wilderness," "wild," or "canoe" when the act was passed were incorporated into the National Wilderness Preservation System, and some of them are presently being studied. The act provided that areas under consideration for wilderness designation should be studied for suitability for incorporation into the Wilderness System. The mineral surveys constitute one aspect of the suitability studies. The act directs that the results of such surveys are to be made available to the public and be submitted to the President and the Congress. This report discusses the results of a mineral survey of part of the Orleans Mountain Roadless Area which includes parts of B5079 and C5079, Klamath and Shasta-Trinity National Forests, Siskiyou and Trinity Counties, northern California. The areas were classified as further planning areas during the Second Roadless Area Review and Evaluation (RARE II) by the U.S. Forest Service, January 1979. Area C5079 NW was classified as a nonwilderness area and is not part of the mineral resource assessment program. It has been incorporated in this report because it was included in the geologic mapping of the study area.

SUMMARY

Gold was mined from both lode and placer deposits in parts of the Orleans Mountain Roadless Area between 1875 and 1951. Area B5079 has one area with a low to moderate potential for additional small pockets of lode gold resources. Area C5079 has eight areas (shown shaded on fig. 2) with a low to moderate potential for additional small pockets of lode and placer gold resources. A survey of mines, prospects, and mineralized areas was not scheduled in Area C5079 NW and no mines or prospects were found during the geologic mapping of the area. Areas B5079 and C5079 have one prospect each (Saloon Ridge, map no. 4 and Wyman, map no. 12, respectively) with a low resource potential for chromium.

INTRODUCTION

The study area which is part of the Orleans Mountain Roadless Area encompasses approximately 102 mi² in Siskiyou and Trinity Counties, Calif. (fig. 1). Area B5079 consists of about 29 mi² in the Klamath National Forest, area C5079 totals 73 mi² in the Shasta-Trinity National Forests, and area C5079 NW included in this report consists of about 53 mi² in the Klamath National Forest. The study area lies within the Klamath Mountains geologic province in heavily forested rugged terrain with elevations ranging from 3,000 to 8,000 ft. Its southern portion is accessible from California State Highway 3 via the Coffee Creek road. The northern portion is accessible from the Gazelle-Forks of Salmon road between Callahan and Cecilville.

This mineral resource potential study is based on an earlier study of the Salmon-Trinity Alps Primitive Area (Hotz and others, 1972) by the U.S. Geological Survey and U.S. Bureau of Mines. The Salmon-Trinity Alps study included the parts of C5079 and B5079 described in this report. The U.S. Bureau of Mines literature and mining-claim record searches, and field work for the earlier study covered most of the present study area. No additional record searches or field work has been done by the U.S. Bureau of Mines since 1970. However, mineral resources and occurrences were reinterpreted, based on current (1983) economic conditions.

Additional U.S. Geological Survey work in the area since 1970 has consisted of geologic reconnaissance and geochemical sampling during the 1981 and 1982 summer field seasons.

**GEOLOGY, GEOCHEMISTRY, AND GEOPHYSICS
PERTAINING TO MINERAL RESOURCE ASSESSMENT**

GEOLOGY

The Orleans Mountain area consists of four generally north-south trending tectonic terranes separated by thrust faults (Irwin, 1977; Davis, 1968; Jayko and Blake, 1983). From east to west these terranes are: Trinity, Central Metamorphic, Fort Jones, and North Fork (Blake and others, 1982). These terranes formed the country rock surrounding Jurassic and (or) Cretaceous plutons. Gold- and silver-bearing magmatic fluids intruded all rock types of the study area regardless of terrane affinity.

The Trinity terrane consists of predominantly serpentinized harzburgite and dunite with lesser amounts of gabbro and diabase. Only the Trinity terrane contains some rocks which were mineralized during a process which predated and was unrelated to the Jurassic and (or) Cretaceous plutonic activity. Small chromium-rich pods several feet in width are interlayered with ultramafic rocks. The chromium layers are thought to have formed by gravity settling of heavy crystals from a mafic magma during formation of oceanic crust. Geochemical analyses of whole-rock samples from several chromium-rich pods indicated between 19.1 and 27 percent chromium.

The Central Metamorphic terrane consists of two formations, the Salmon Hornblende Schist and the Grouse Ridge Formation of Davis and others (1965) (Irwin, 1977; Davis, 1968). The Salmon Hornblende Schist is a well-foliated

amphibolite with the mineral assemblage hornblende-albite-epidote. The Grouse Ridge Formation consists of quartz-mica schist, quartzite, marble, and amphibolite. Gold- and silver-bearing quartz veins and volcanic dikes sometimes occur near lithologic contacts within the Grouse Ridge Formation and along thrust faults bounding the Central Metamorphic terrane. These veins and dikes were cogenetic with plutonic activity that occurred long after the regional metamorphism of these rocks.

The Fort Jones terrane consists of strongly deformed blueschist-facies metavolcanic and metasedimentary rocks (Blake and others, 1982). Zones of mineralization are controlled by preexisting shears and fractures.

The North Fork terrane is a melange containing low-grade slightly metamorphosed volcanic rocks and sedimentary rocks including chert and limestone (Irwin, 1977).

The four terranes were intruded by Late Jurassic and (or) Early Cretaceous quartz diorite plutons and dikes which brought with them the gold- and silver-bearing magmatic fluids. All of the lode deposits appear to be associated with this event. The mineralization was sometimes localized along faults and lithologic contacts which served as conduits for the igneous fluids.

GEOCHEMISTRY

Geochemical analyses were obtained for several hundred stream-sediment, pan-concentrate, and whole-rock samples distributed throughout the area (Hotz and others, 1972). Several small (less than one square mile) geographic areas with anomalous concentrations of either gold, silver, lead, copper, or molybdenum are present, but gold and silver anomalies are most common. Anomalies which indicate a potential mineral resource are shown as shaded areas on figure 2.

GEOPHYSICS

Magnetic anomalies in the study area are associated with the Jurassic plutons and ultramafic rocks of the easternmost Trinity terrane (Hotz and others, 1972). These anomalies are reasonable for the types of rocks involved, and provide no indication of mineral deposits.

MINING DISTRICTS AND MINERALIZATION

Fifty-six mines and prospects are located within or immediately adjacent to the study area. The Grand National mine, Red Rock Mountain prospect and Nash placer are on the only patented claims in or immediately adjacent to the roadless area.

Recorded production of gold and silver began as early as 1875 and continued until 1951. A total of 29,408 oz of gold was recorded from 13 mines (table 1). Nine of the 13 mines yielded 4,801 oz of silver. Twelve of the 13 mines from which production is recorded lie within or adjacent to C5079, with the other one in area B5079. Four of them, Grand National, Nash placer, Andy Lease, and Morning Star lie about 1/2 to 1/4 mi outside the study area.

All fifty-six mines and prospects of this report are summarized from Hotz and others (1972) with placer gold values adjusted to \$400 per ounce (table 2).

Area B5079

One locality within area B5079 with a moderate potential for small concentrations of lode gold resources is around the Klatt mine. The property produced approximately 1,200 oz of gold and 550 oz of silver between 1905 and 1910. There has been no record of production since. Gold and silver with minor amounts of copper and lead occur in a persistent vein system in a shear zone as much as 35 ft wide, the zone is reported by Hotz and others (1972) to be 2 mi long. Finely divided free gold, pyrrhotite, galena, and chalcopyrite have been observed in the zone. Samples from stock piles contained 0.35 and 1.48 oz gold per ton, 15 ppm copper and lead, and a trace of silver. None of the underground workings are accessible.

A grab sample of ultramafic rocks from the vicinity of the Saloon Ridge prospect contained 19.8 percent chromium. However, most of the ultramafic rocks in this area consist of sheared serpentinite, and there is a low potential for chromium resources.

Area C5079

The Grand National, Dorleska, Yellow Rose, Packer, Geneva, and Hardscrabble mines, and the Gypsy Queen, Carter, and Mount Shasta View prospects have a low to moderate potential for lode gold resources. The Wyman prospect has a low potential for chromium resources. Gravels at the Schlomberg and Holland mines have a low potential for additional placer gold resources. Except for the Grand National, none of the underground mine workings are accessible.

Although the Grand National (Tangle Blue) mine is outside the study area, structures that controlled gold, silver, and copper mineralization may extend eastward and (or) southward into the area. Gold, silver, and copper minerals occur in at least three east-striking steeply dipping quartz veins in granodiorite near its contact with serpentinite. Veins are from 1 to 8 ft thick. The Grand National produced about 1,500 oz of gold, 2,200 oz of silver, and 1,900 lb of copper between 1934 and 1937.

The Dorleska and Yellow Rose mines are inaccessible and exposures of mineralized rock at the surface are sparse. Based on limited published descriptions, we deduce that gold occurs near the contact with metamorphic rocks of the Grouse Ridge Formation in quartz veins associated with andesite and dacite porphyry dikes in ultramafic rocks. About 10,000 oz of gold were produced from the Dorleska mine between 1912 and 1938; about 3,400 oz of gold came from the Yellow Rose from 1898-1901.

Gold and silver minerals occur in quartz veins which cut amphibolite at the Packer mine. Veins appear to be discontinuous, but about 400 oz of gold and 240 oz of silver were produced during 10 working seasons between 1909 and 1932.

The Geneva mine is in quartz-mica schist containing quartz veins, near a contact with actinolite schist. The mine produced 147 oz of gold, 335 oz of silver, and 246 lb of lead between 1931 and 1939.

Quartz-mica schist, gneiss with andesite porphyry dikes, and quartz veins near the contact with serpentinite at the Hardscrabble (Keating) mine, contain gold and silver minerals. The mine produced about 120 oz of gold and 7 oz of silver between 1899 and 1909.

The Gypsy Queen prospect workings followed rhyolite porphyry dikes and associated quartz veins in serpentinite. Although no record of production was found, extensive workings and the presence of a stamp mill suggest possible production of gold and silver ore. Quartz samples at the dump site contain anomalous amounts of gold and silver.

A quartz-rich vein system in quartz diorite at the Carter prospect contains gold and silver minerals. An 8-ft-long composite sample of the vein system had 0.03 oz gold per ton. Two vein-quartz samples from the dump contained 0.28 and 0.3 oz gold per ton; however, quartz makes up a small part of the rock on the dump.

The Mount Shasta View prospect is in quartz diorite with quartz veins and andesite dikes, near the contact with serpentinite. Two vein-quartz samples collected from apparent stockpiles contain 1.97 and 5.66 oz silver per ton.

Chromite-rich pods occur in serpentinitized ultramafic rocks at the Wyman prospect. Four chip and grab samples of ultramafic rocks along an 80-ft-long line contain between 23.77 and 27.17 percent chromium.

The Schlomberg placer mine is on an auriferous gravel deposit which was nearly depleted by previous mining. Former operators produced about 460 oz of gold and 40 oz of silver between 1916 and 1937.

Auriferous gravels at the Holland placer mine also have been virtually depleted. Less than 100,000 yd³ of terrace gravel remains on East Fork Coffee Creek on the Holland claim group. About 1,800 oz of gold were produced, mainly between 1875 and 1925.

C5079 NW occupies the western part of the study area and consists of approximately 53 mi². A survey of mines, prospects, and mineralized areas was not scheduled in this area and no mines or prospects were found during geologic reconnaissance mapping.

CRITERIA FOR ASSESSING MINERAL RESOURCE POTENTIAL

The determination of areas of possible mineral resource potential was based primarily on mine and prospect examinations, geochemical sampling anomalies, and in some cases production records. Geochemical maps were prepared for selected elements, gold, silver, lead, copper, molybdenum, and mercury (Jayko, 1983; Hotz and others, 1972). These maps indicate, either values above an empirical background or, in the case of some elements (for example, gold), any detectable value. Areas of anomalous values of a selected element or areas in which rarer elements commonly occur were identified, generalized, and represented on the mineral resource potential map as shaded areas.

ASSESSMENT OF MINERAL RESOURCE POTENTIAL

Gold which has the highest mineral resource potential in the study area, is generally accompanied by accessory silver. Some deposits may also contain small amounts of copper and lead as by-products of gold refining. At least 29,408 oz of gold and 4,801 oz of silver have been produced from or within one-half mile of the study area. Of this total, 13,580 oz of gold and 1,467 oz of silver were from placer deposits. Most of the known production from the placer deposits as well as most areas with a moderate potential for lode gold resources are in area C5079. Potential for gold resources in this area is greater at the current (1983) gold price of more than \$400 per ounce than at the \$35 per ounce price which prevailed when Hotz and others (1972) made the earlier mineral resource study.

Both areas, B5079 and C5079, have known occurrences (Saloon Ridge, map no. 4, and Wyman prospects, map no. 12, respectively) of ultramafic rock with 19 percent or more chromium. Known chromite-rich pods are small and scattered, and there is a low potential for larger and more closely spaced occurrences.

The area has no potential for combustible fuels. Stone, sand, and gravel are plentiful, but these high-bulk low-unit-cost mineral resources are far from local markets.

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Table 1.--Recorded production from lode and placer mines in and near the study area. [Summarized from Hotz and others (1972)]

Map No	Mine	Years active	Gold (oz)	Silver (oz)	Copper (lb)	Lead (lb)
3	Klatt L	1905 - 1910	1,198	552	--	--
8 *	Grand National L	1934 - 1937	1,500	2,200	1,900	--
13	Packer L	1909 - 1932	400	240	--	--
14 *	Morning Star L	1899	63	--	--	--
16	Geneva L	1931 - 1939	147	335	--	246
20	Hardscrabble L	1899 - 1909	120	7	--	--
22	Schlomberg P	1916 - 1937	460	40	--	--
37 *	Andy Lease L	1930's	100	--	--	--
43	Dorleska L	1912 - 1938	10,000	700	--	--
43	Yellow Rose L	1898 - 1901	3,400	--	--	--
33	Steveal P	1913 - 1935	220	27	--	--
47 *	Nash P	1896 - 1951	10,000	1,400	--	--
28	Holland P	1875 - 1925	1,800	--	--	--
Total			29,408 oz	4,801 oz	1,900 lb	246 lb

* Located outside the study area within 1/2 mi of the boundary
L, Lode
P, Placer
--, No record

Table 2.--Mines and prospects in and near the study area. [Summarized from Hotz and others (1972). Placer gold values adjusted to \$400 per ounce]

Map No.	Name	Workings	Sample and resource data
1	Pet (Loftus) prospect	8 lode claims 1 excavation 2 adits	Fault separating serpentinite and quartz diorite. Samples contain trace, 0.03, and 11 oz gold per ton. Gold is present in quartz veins; however, veins appear thin and discontinuous.
2	Lucky Star prospect	Shallow excavation approximately 50 ft wide plus one trench.	Dacite porphyry and altered pegmatitic granitic rocks. Samples contain between a trace and 0.01 oz gold per ton.
3	Klatt mine	4 caved adits 1 trench 1 inclined shaft	Shear zone separating serpentinite and granitic rock. Produced 1,198 oz of gold and 552 oz of silver between 1905 and 1910; no production since. Sample results range from 0.35 to 1.48 oz gold per ton, and trace silver.
4	Saloon Ridge prospect	Shallow bulldozer work 1 trench	Serpentinite and granitic rocks. Samples contain trace gold, 0.02 oz silver per ton, and 0.1-19.8 percent chromium. Chromium-rich lenses are isolated.
5	Carter prospect	1 adit	Quartz diorite with quartz-rich vein system. Samples contain 0.3 and 0.28 oz gold per ton and trace to 0.14 oz silver per ton.
6	Eagle prospect	1 pit	Weathered and sheared granite. Trace gold and no silver.
7	Mount Shasta View prospect	3 caved adits 1 pit	Quartz diorite with quartz veins and andesite dikes. Extensive workings with no production record. Stockpile contained as much as 1.97 oz gold per ton and 5.66 oz silver per ton.
8	Grand National mine (Tangle Blue)	Includes patented claims 3 adits	Quartz veins in granodiorite faulted against serpentinite. Produced 1,500 oz of gold, 2,200 oz of silver and 1,900 lb of copper between 1934 and 1937. Owner estimates 22,600 tons with approximately 0.6 oz gold per ton in three veins which have been worked.
9	May Queen prospect	1 adit 4 small pits	Dacite porphyry dikes in serpentinite. Trace gold and silver. Short-fiber asbestos is present but not abundant.
10	Unnamed prospect	1 caved adit	Weathered serpentinite. Trace gold.
11	Jumbo Atlas prospect	1 small pit 1 drill station	Serpentinite cut by dacite porphyry dikes and quartz veins. Trace gold and silver.
12	Wyman prospect	2 caved adits	Serpentinite intruded by andesite porphyry. No gold and trace silver. Four samples from scattered pods of chromium-rich rock contain 23.77 to 27.17 percent chromium.
13	Packer mine	11 caved adits	Amphibolite of the Salmon Hornblende Schist cut by quartz veins. Produced 400 oz of gold and 240 oz of silver between 1909 and 1932. Waste-dump samples contain trace to 1.87 oz of silver per ton.
14	Morning Star	Vertical shaft	Siliceous metamorphic rocks cut by quartz veins. Produced 63 oz of gold in 1899. Samples contained trace and 0.06 oz silver per ton. Claim was deeded to the State of California in 1937.
15	Unnamed prospect	Pit	Greenstone. No gold and 0.14 oz silver per ton.

16	Geneva mine	Adit	Vein system in quartz-mica schist. Produced 147 oz of gold, 335 oz of silver and 246 lb of lead between 1931 and 1939. Selected samples contain between 0.75 and 10.75 oz gold per ton.
17	Shasta Lily prospect	1 caved adit	Dacite porphyry dike in serpentinite. Dump sample contains trace gold and 0.14 oz silver per ton.
18	Gold Crown prospect	2 trenches	Serpentinite. No detectable gold or silver.
19	M.P. Rose prospect	1 caved adit	Serpentinite intruded by a rhyolite porphyry dike. Trace gold and silver.
20	Hardscrabble (Keating) mine	2 caved adits	Quartz-mica schist cut by andesite porphyry dikes and quartz veins. Produced 120 oz of gold and 7 oz of silver between 1899 and 1909. Selected dump samples contain between 0.05 to 0.30 oz gold per ton and 0.4 to 1.21 oz silver per ton.
21	Gypsy Queen prospect	3 caved adits 2 trenches Mill ruins	Veins and dikes in serpentinite. Selected samples contain trace to 0.43 oz gold and trace to 0.3 oz silver per ton.
22	Schlomberg placer mine	Placer	Granodiorite, schist, and serpentinite nearby. 460 oz of gold and 40 oz of silver were produced between 1916 and 1937. Most of the gravel was removed.
23	Saloon Creek placer	Placer	Four gravel terrace remnants ranging in size from 600 to 3,000 yd ³ . Samples range from no detectable gold to \$16 (0.04 oz) per cubic yard.
24	Granite Creek placer	Placer	Five gravel terraces ranging in size from 1,000 to 8,000 yd ³ . Sample contains from zero to trace gold.
25	North Fork Creek Coffee placer	Placer	Four gravel terraces ranging in size from 2,000 to 8,000 yd ³ . Average value probably less than \$1.25 (0.003 oz gold) per cubic yard, although one sample has \$3.60 (0.009 oz) per cubic yard.
26	Francis Cabin placer	Placer	One gravel terrace containing approximately 100,000 yd ³ of gravel with less than \$1.25 (0.003 oz gold) per cubic yard.
27	T & C placer	Placer	No terrace gravel, some coarse gold was recovered from the stream channel by the owners in 1968-70.
28	Holland placer mine	Placer	Approximately 100,000 yd ³ of terrace gravel. Produced approximately 1,800 oz of gold between 1875 and 1925. Samples range from less than \$1.25 to \$44 (less than 0.003 to 0.11 oz gold) per cubic yard.
29	Rocky Gulch placer	Placer	Estimated 300,000 yd ³ of gravel. Samples contain as much as \$1.25 (0.003 ounce gold) per cubic yard.
30	Chessie placer	Placer	No gravel terraces or placer resources are present.
31	Cubby and Kitty placer	Placer	Approximately 50,000 yd ³ of terrace with less than \$1.25 (0.003 oz gold) per cubic yard.
32	Adams Creek placer	Placer	Four terraces with a total volume of approximately 20,000 yd ³ with an average of not more than \$1.25 (0.003 ounce gold) per cubic yard, although select samples contain as much as \$4.40 (0.011 oz gold) per cubic yard.
33	Steveal (Stevens Gulch) placer mine	Placer	All terrace gravel has been removed. Produced 220 oz of gold and 27 oz of silver between 1913 and 1935.

34	South Fork Coffee Creek placers	Placer	Approximately 33,000 yd ³ of terrace gravel. Samples contain trace to less than \$1.25 (0.003 oz gold) per cubic yard.
35	Hickory Creek placers	Placer	Approximately 4,000 yd ³ terrace gravel containing less than \$1.25 (0.003 oz gold) per cubic yard.
36	Yellow Pine prospect	Caved adit	Quartz veins in andesite porphyry. Trace gold and trace to 0.14 oz silver per ton.
37	Andy Lease	5 adits	Quartz veins associated with dacite porphyry. Mine produced approximately 100 oz of gold in the 1930's. Selected samples from waste dumps contain trace gold and 0.14 oz silver per ton.
38	Niedra prospect	2 adits	Quartz veins in diorite dikes and serpentinite. Trace gold and trace to 0.12 oz silver per ton.
39	Ferndale prospect	None	Ultramafic rocks. Nephrite jade claim. Chlorite-hornblende veins were mistaken for jade.
40	Gigalo prospect	2 adits	Amphibolite. Samples contain trace gold and 0.08 oz silver per ton.
41	Great Dike prospect	1 caved adit	Salmon Hornblende Schist intruded by diorite dike rock. Trace gold occurs in country rock.
42	B.V. prospect	1 trench	Mica schist and amphibolite associated with serpentinite and dark-gray mafic dikes. Dump rock contains trace gold and 0.12 oz silver per ton.
43	Dorleska and Yellow Rose mines	Approximately 10 caved adits	Quartz veins associated with dikes. Produced more than 10,000 oz of gold. Gold price was \$20.67/oz between 1912 and 1938. Gold ranged from trace amounts to 7.96 oz per ton and silver from undetected to 0.2 oz per ton.
44	LeRoy prospect	2 caved adits	Near serpentinite-mica schist contact. Trace gold and as much as 0.14 oz silver per ton.
45	Unnamed prospect	1 adit and 2 pits	Serpentinite and dike rocks. Trace gold and 0.06 to 0.2 oz of silver per ton.
46	Red Rock Mtn prospect (Includes 4 patented claims)	4 adits 1 shaft 1 trench	Serpentinite. Dump samples contain trace gold and undetected to 0.16 oz of silver per ton.
47	Nash placer mine (8 patented claims)	Placer	Produced 10,000 oz of gold and 1,400 oz of silver from 1896 to 1951. Four million yd ³ of resources average \$1.60 (0.004 oz gold) per cubic yard.
48	Union Creek placer	None	Approximately 10,000 yd ³ of terrace gravel.
49	Unnamed placer	Placer	Three gravel bars containing 2,000 to 3,000 yd ³ each. Values are locally as much as \$6.80 (0.017 oz gold) per cubic yard.
50	Cecil Bell's placer	Placers	One hundred thousand yd ³ of resources. Samples range from \$1.25 to \$20.00 (0.003 to 0.05 oz gold) per cubic yard.
51	James Bell's placer	Placer	Terraces contain approximately 13,000 yds of gravel. Samples range from \$2.80 to \$6.80 (0.007 to 0.017 oz gold) per cubic yard.
52	Keystone placer	Placer	Fifty thousand yd ³ of gravel. A select sample contains \$4.80 (0.012 oz gold) per cubic yard.
53	Unnamed gravel bar on Coffee Creek	Placer	700,000 yd ³ of resources ranging from \$1.25 to \$12.00 (0.003 to 0.03 oz gold) per cubic yard.

54	Prince Albert placer	Placer	Approximately 30,000 yd ³ of gravel. A sample contains \$6.80 (.017 oz gold) per cubic yard.
55	Big Flat placer	Placer	Mined out, approximately 2,000 yd ³ remain. Sample contains \$1.25 (0.003 ounce gold) per cubic yard.
56	Upper Union placers	Placer	Total of about 200,000 yd ³ of terrace gravel over about a 1 mi stretch of creek. Average concentration of gold is not greater than \$1.25 (0.003 oz) per cubic yard.

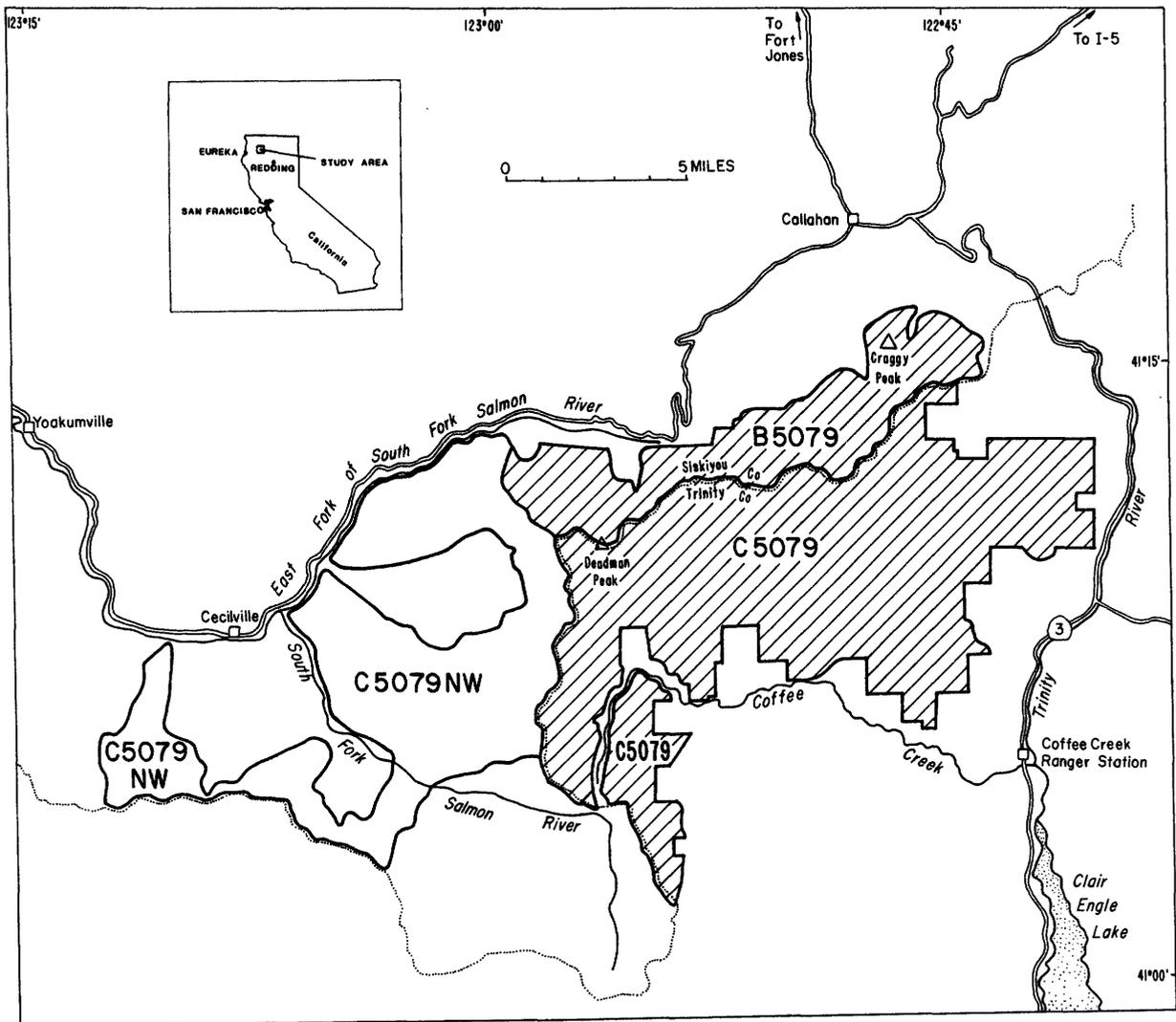


Figure 1.—Index map showing location of the Orleans Mountain Roadless Area, northern California.

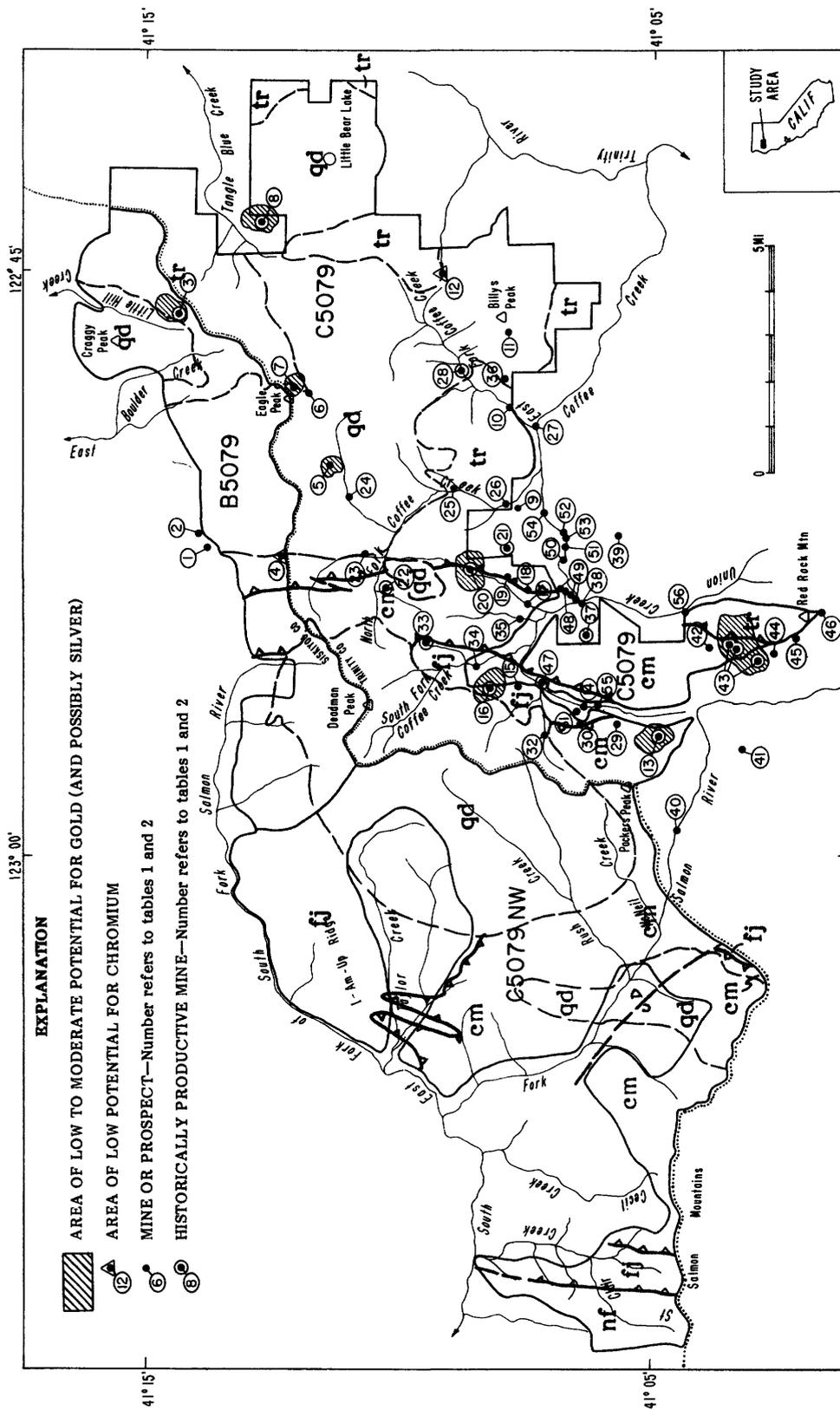


Figure 2.—Locations of mines, prospects, and areas with mineral resource potential for gold and chromium.

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