



EXPLANATION

X APPROXIMATE LOCATION OF PINS—See table of accompanying pamphlet

AREA OF LOW POTENTIAL FOR GOLD

ALTERED AREA—Hydrothermally altered, bleached area with probably no potential for mineral resources. Dashed where approximately located

CORRELATION OF MAP UNITS FOR ISHI, MILL CREEK, AND POLK SPRINGS

Qbd	QUATERNARY
Qta	
Qtv	
Tt	TERTIARY
Kc	
M2Pm	MESOCENE AND (OR) PALEOZOIC

DESCRIPTION OF MAP UNITS FOR ISHI, MILL CREEK, AND POLK SPRINGS

Qbd BASALT OF DEER CREEK (QUATERNARY)

Qta AMBISIT INTERTRIVE (PLEISTOCENE AND (OR) PLEISTOCENE)

Qtv VOLCANIC FLOW ROCKS (PLEISTOCENE AND (OR) PLEISTOCENE)—Basalt and andesite

Tt TUSCAN FORMATION (PLEISTOCENE)—Tuff breccia with siliceous intercalated flows

Kc CHICO FORMATION (CRETACEOUS)—Sandstone

M2Pm METAMORPHIC ROCKS (MESOCENE AND (OR) PALEOZOIC)—Gneiss and schist

CONTACT—Dashed where inferred

APPROXIMATE BOUNDARY OF ROADLESS AREA

STRESES RELATED TO WILDERNESS

The Wilderness Act (Public Law 85-623, September 3, 1968) 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 survey of the Ishi, Mill Creek, Polk Springs, and Butt Mountain Roadless Areas in the Lassen National Forest, Tehama and Plumas Counties, California. Ishi (5598), Mill Creek (5528), Polk Springs (5597), and Butt Mountain (5510) Roadless Areas were classified as further planning areas during the Second Roadless Area Review and Evaluation (RAE II) by the U.S. Forest Service, January 1975.

SUMMARY

Approximately 270,000 yd³ of inferred surficial gravel resources were estimated in three Tertiary channel gravel deposits in the Polk Springs Roadless Area (table 1 of accompanying pamphlet). These resources are exposed between Paleocene and (or) Mesocene metamorphic rocks and tuff-breccia and lava flow of the Pliocene Tuscan Formation which suggests that although no deposits were identified in the other roadless areas, they may be concealed beneath the Tuscan Formation.

Recent stream gravels of Deer Creek in the Polk Springs Roadless Area contain enough gold to warrant further study; however, the stream gravels do not have sufficient values to be considered a significant resource. Potential exists for additional surficial gravels near the Occidental mine in the Polk Springs Roadless Area.

Bleached zones within the Tuscan Formation do not appear to have associated mineralization. Although geothermal activity near Lassen Peak does not extend as far south as the study area, Sulphur Lake, in the southern limit area, contains gold mineralized areas.

INTRODUCTION

The Ishi (14,500 acres), Mill Creek (7,700 acres), Polk Springs (9,400 acres), and Butt Mountain (8,600 acres) Roadless Areas are located approximately 25 mi north of Chico and 25 mi south of Lassen Peak, Calif. (fig. 1) in a region characterized by rugged topography and dense forest or forest. Access to the area is by dirt and secondary roads off State Highways 32, 36, and 89. Geologically the area is characterized by thick volcanic sequences of Tertiary and Quaternary age with local outcrops of Paleocene and (or) Mesocene and Cretaceous strata.

GEOLOGY

The Ishi, Mill Creek, Polk Springs, and Butt Mountain Roadless Areas are characterized by thick volcanic sequences of Tertiary and Quaternary age underlain by Paleocene and (or) Mesocene metamorphic rocks and Cretaceous and Paleocene strata. The volcanic rocks are primarily andesitic and basaltic and occur in the form of flows, tuffs, and tuff-breccias. They are overlain by the Pliocene Tuscan Formation, which unconformably overlies the metamorphic rocks. In the Mill Creek area, the Tuscan Formation is characterized by intercalated tuff-breccias and flows. In the Polk Springs area, the Tuscan Formation is a sequence of tuff-breccias and flows with intercalated mafic tuff and flow beds. Outcrops of the Tuscan Formation are scattered throughout the area, most of which are extensive; others occur locally. Peterson and others (1982) provide further details about the geology of the area.

GEOCHEMISTRY

Geochemical data of Peterson and others (1982) indicate no evidence of geochemical anomalies associated with mineralization.

MINEING DISTRICTS AND MINERALIZATION

The only significant mining activity in the study area has been in the Polk Springs Roadless Area on claims near Deer Creek near Polk Springs. These claims are accessible by trails and from gravel roads originating at Polk Springs or the Transfer Fire Station on State Highway 32.

Gold discovered in Deer Creek about 1850 resulted in the location of claims on the present sites of the Blue Channel, Jackson, and Occidental placer mines in the Polk Springs mining district. The deposits were worked by small-scale methods until about 1880 when hydraulic mining was introduced. Gravel reached 100 to 200 feet in depth on the side of Deer Creek Canyon were hydraulically mined until the Super court decision terminated hydraulic mining in the Sacramento River drainage in 1885. No subsequent production has come from the Polk Springs district; however, an attempt was made in 1930 to mine the Blue Channel placer. Production records are not available.

The Blue Channel, Jackson, and Occidental placers are on perched terraces of surficial gravels channel between Paleocene and (or) Mesocene metamorphic rocks and tuff-breccias and lava flows of the Pliocene Tuscan Formation. These deposits are further described in table 1 of accompanying pamphlet.

ASSESSMENT OF MINERAL POTENTIAL

Tertiary channel deposits in Deer and Hitch Creeks show evidence of metamorphic rocks contained sufficient gold for placer operations to have occurred in the past. Approximately 270,000 yd³ of inferred placer gold resources which may contain gold values of \$1.50 per yd³ occur at the Blue Channel placer site in the Polk Springs Roadless Area. Gold values in hand samples are based on 1500 per tray or. U.S. Bureau of Mines sampling at the Blue Channel site was restricted to a portion of alluvial areas above bedrock and contained no gold. However, previous samples (Jules, 1933) contained gold values averaging \$1.50 per yd³. About 50,000 yd³ of inferred subconformable placer gold resources valued at \$1.27 per yd³ occur at the Occidental site and approximately 19,000 yd³ of inferred subconformable placer gold resources valued at \$0.70 per yd³ occur at the Jackson site also in the Polk Springs Roadless Area. Hydraulic mining restrictions have prevented gold recovery from these placers; however, new techniques such as leaching could make future gold recovery possible.

Potential exists for additional surficial gravels in Tertiary river channels under the Tuscan Formation at the Occidental placer site. Recent stream gravels of Deer Creek in the Polk Springs Roadless Area contain gold; however, a gold resource does not exist because of insufficient volumes of gravel. These stream gravels contain enough gold to attract gold hobbyists.

Gold-bearing gravel exposures at these sites suggest that additional placer gold deposits are concealed in Tertiary river channels beneath the Tuscan Formation in the four roadless areas. Small amounts of gold may occur in the quartz veins within the metamorphic units exposed along these areas.

Although small hydrothermally altered areas within the Tuscan Formation are scattered throughout the area, they show no mineralogical or geochemical evidence of mineralization.

Several oil and gas leases bordering the Ishi and Mill Creek Roadless Areas were held in the 1950's and until 1960's. All the leases are now terminated with no production recorded. Cretaceous sedimentary rocks which have yielded gas in the central Sacramento Valley may correlate with the Chico Formation (Rogers, 1962), a unit underlying the Tuscan in parts of the roadless areas.

Applications for geothermal leases are pending for several tracts covering about 2.5 mi² on the north side of the Butt Mountain Roadless Area. No evidence of potential geothermal resources was found during this study.

Sand and gravel occur in narrow terraces and slender strips along major drainages in the area. The occurrences have a low potential because they are small and distant from major markets.

REFERENCES

Wiley, C. S., 1931, Report on the Crocker placers, Deer Creek, Tehama County, California: unpublished report, 10 p.

Peterson, J. A., Madley, Robin, and Johnson, K. A., 1983a, Maps showing geochemical analyses of the Ishi, Mill Creek, Polk Springs, and Butt Mountain Roadless Areas, Tehama and Plumas Counties, California: U.S. Geological Survey Miscellaneous Field Studies Map MF-1340-A, scale 1:62,500.

Peterson, J. A., Madley, Robin, Johnson, K. A., and Madley, R. A., 1983b, Geologic maps of the Ishi, Mill Creek, Polk Springs, and Butt Mountain Roadless Areas, Tehama and Plumas Counties, California: U.S. Geological Survey Miscellaneous Field Studies Map MF-1340-B, scale 1:62,500.

Rogers, R. A., 1962, Surface geology of the east side of the Sacramento Valley, California, in Henry, G. K., Jr., ed., Geologic guide to the gas and oil fields of northern California: California Division of Mines and Geology Bulletin 181, p. 87-92.

Williams, Howell, 1932, Geology of the Lassen Volcanic National Park, California: University of California Publications, Bulletin of the Department of Geological Sciences, v. 21, p. 195-385.

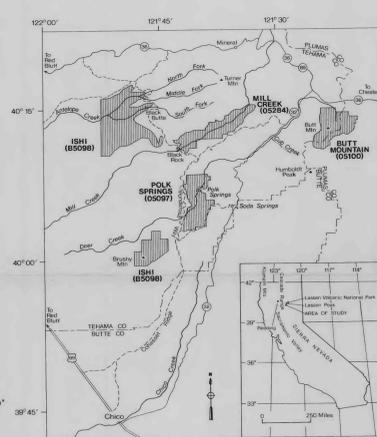
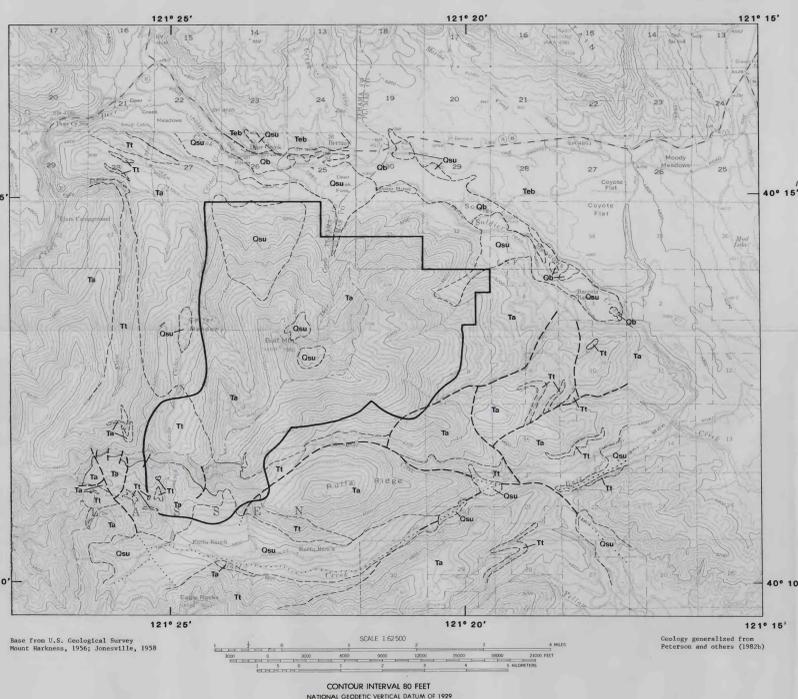


Figure 1.—Index map showing location of roadless areas (lined areas) described in this report.



CORRELATION OF MAP UNITS FOR BUTT MOUNTAIN

Qbu	QUATERNARY
Qb	
Tt	TERTIARY
Tt	

DESCRIPTION OF MAP UNITS FOR BUTT MOUNTAIN

Qbu SURFICIAL DEPOSITS, UNWINDERS (PLEISTOCENE AND (OR) PLEISTOCENE)—Alluvium and silts

Qb BASALT (QUATERNARY)

Tt EASTERN BASALTS OF WILLIAMS (1913) (PLEISTOCENE)

Tt AMBISIT (PLEISTOCENE)

Tt TUSCAN FORMATION (PLEISTOCENE)—Tuff-breccia flows

CONTACT—Dashed where inferred; dotted where concealed

FAULT—Dashed where inferred; dotted where concealed

APPROXIMATE BOUNDARY OF ROADLESS AREA

Base from U.S. Geological Survey, North Plumas, 1966, 3000-ft scale, 1958

Geology generalized from Peterson and others (1982b)

CONTOUR INTERVAL 80 FEET
NATIONAL GEODESIC VERTICAL DATUM OF 1929

BUTT MOUNTAIN ROADLESS AREA

MINERAL RESOURCE POTENTIAL MAP OF THE ISHI, MILL CREEK, POLK SPRINGS, AND BUTT MOUNTAIN ROADLESS AREAS, TEHAMA AND PLUMAS COUNTIES, CALIFORNIA

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Explanatory pamphlet accompanies map
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Box 2328, Federal Center, Denver, CO 80223