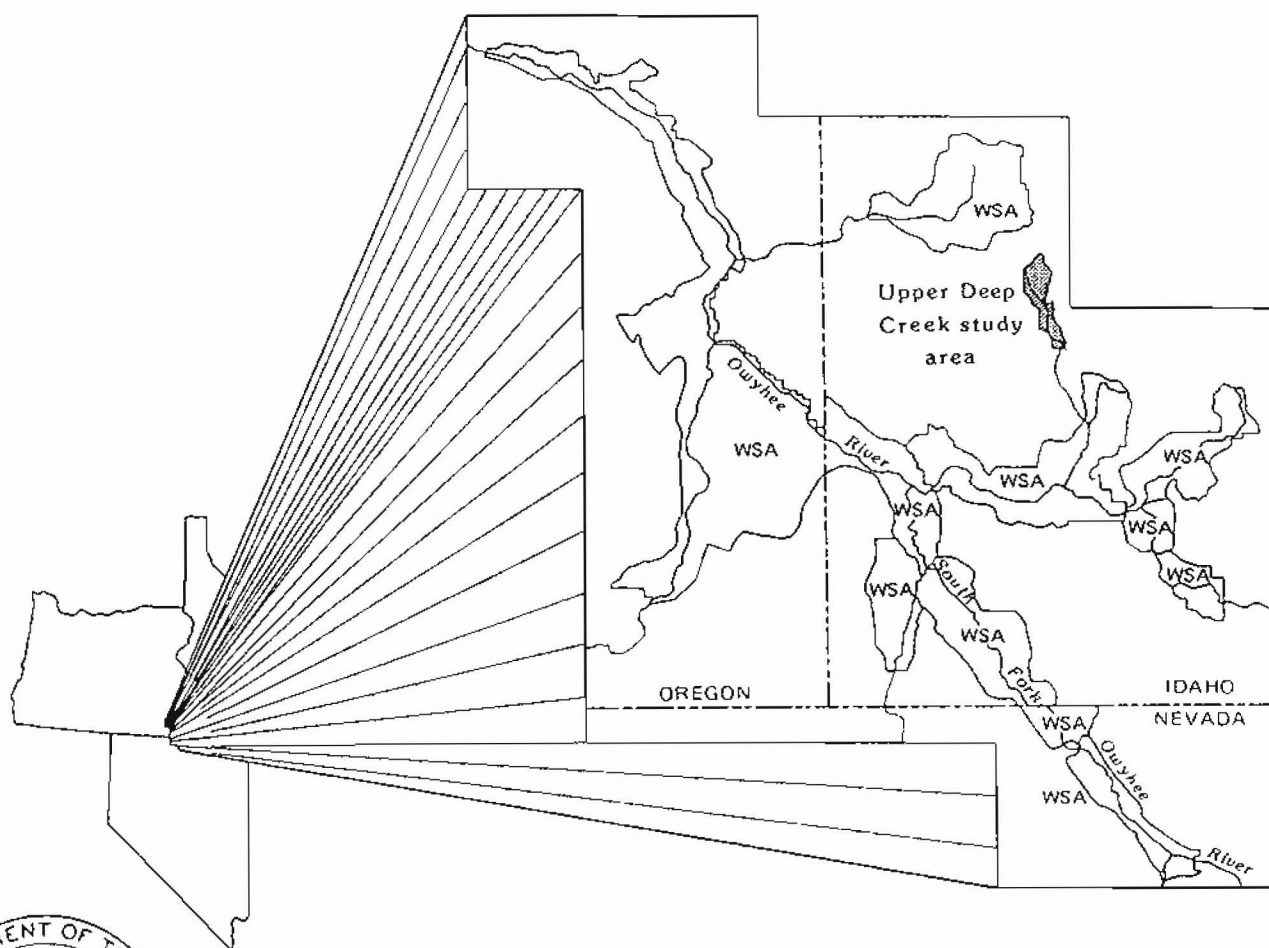


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Bureau of Mines Mineral Land Assessment/1986
Open File Report

Mineral Resources of the Upper Deep Creek Study Area, Owyhee County, Idaho



BUREAU OF MINES
UNITED STATES DEPARTMENT OF THE INTERIOR

MINERAL RESOURCES OF THE UPPER DEEP CREEK STUDY AREA,
OWYHEE COUNTY, IDAHO

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PREFACE

The Federal Land Policy and Management Act (Public Law 94-579, October 21, 1976) requires the U.S. Geological Survey and U.S. Bureau of Mines to conduct mineral surveys on U.S. Bureau of Land Management administered land designated as Wilderness Study Areas ". . . to determine the mineral values, if any, that may be present" Results must be made available to the public and submitted to the President and the Congress. This report presents the results of a Bureau of Mines mineral survey of a portion of the Upper Deep Creek Wilderness Study Area (ID-111-448), Owyhee County, ID.

This open-file report will be summarized in a joint report published by the Geological Survey. The data were gathered and interpreted by Bureau of Mines personnel from Western Field Operations Center, East 350 Third Avenue, Spokane, WA 99202. The report has been edited by members of the Branch of Mineral Land Assessment at the field center and reviewed at the Division of Mineral Land Assessment, Washington, DC.

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SUMMARY

A mineral survey of a 5,700-acre portion of the 11,510-acre Upper Deep Creek Wilderness Study Area (ID-111-448) in southwestern Idaho was conducted by the U.S. Bureau of Mines in 1985. No mining claims have been located, no minerals have been produced, and no resources have been identified in the study area.

Three reconnaissance samples of alluvium from the Deep Creek drainage contained \$0.21, \$0.22, and \$2.72 per cubic yard in placer gold, higher than usual for the Owyhee River canyonland area. The samples of near-surface material contained very fine gold in values too low to support large-volume commercial placer operations, but the quantity and size of the particles of gold in the alluvium is expected to increase near bedrock. Consequently, the area may be a target for recreational as well as small commercial suction dredge operations. The physical characteristics of the individual pieces of gold (bright and angular) indicate that it may have recently come from an unidentified nearby source.

Volcanic rocks that may be suitable as dimension stone occur in the study area, but do not have unique properties that would make them preferable to other, more accessible deposits closer to markets. Sand and gravel deposits are limited but might have minor local construction uses.

INTRODUCTION

This report describes the USBM (U.S. Bureau of Mines) portion of a cooperative study with the USGS (U.S. Geological Survey) to evaluate mineral resources and potential of the Upper Deep Creek study area at the request of the BLM (U.S. Bureau of Land Management). The USBM examines individual mines, prospects, claims, and mineralized zones, and evaluates identified mineral and energy resources. The USGS evaluates potential for undiscovered resources based on areal geological, geochemical, and geophysical surveys. Results of the investigations will be used to help determine the suitability of the study area for inclusion into the National Wilderness Preservation System. The immediate goal of this and other USBM mineral surveys is to provide data for the President, Congress, government agencies, and the public for land-use decisions, and the long-term objective is to ensure the Nation has an adequate and dependable supply of minerals at a reasonable cost.

Setting

The Upper Deep Creek study area is in southwestern Idaho (fig. 1) on federal land administered by the Boise District of the BLM. The area examined comprises 5,700 acres of the 11,510-acre WSA 1/ (Wilderness Study Area) and is about 30 mi (mile) south of Boise, ID. It encompasses about 10 mi of south-flowing Deep Creek, including its canyon, and adjoining upland for up to 0.5 mi on the western and 2.6 mi on the eastern sides (fig. 2). The study area is 3 mi north of the Deep Creek-Owyhee River study area (Capstick and Buehler, 1985) and 3 mi southeast of the North Fork Owyhee River study area (Leszykowski, 1986). The field investigations of those areas were conducted in 1984.

Access from Boise is southwesterly about 120 mi along some paved road and mostly excellent dirt road to the northern portion of the study area. Access from Jordan Valley, OR, is southeasterly about 80 mi by dirt road to the northwestern corner of the study area. From there, poor dirt roads bound both the west and east sides. Other westerly access is by dirt roads about 100 mi from McDermitt, NV. Southerly access from Elko, NV, is by paved and dirt roads about 160 mi. Precipitation from spring and summer thunderstorms can easily make road access difficult, if not impossible, for a day or two following the rainfall.

The study area is within the Owyhee Uplands, an extensive volcanic region and part of the Columbia-Snake River Plateau. The terrain is flat to gently rolling, with an average elevation of about 5,200 ft (feet) except where Deep Creek and its intermittent tributaries have cut deep canyons. Relief from the main canyon rim - which in many places is nearly vertical - to the river averages about 400 ft. The highest point in the study area, about 5,770 ft, is at the northern corner. The lowest point, about 4,800 ft, is on the river at the southern boundary of the study area.

Sagebrush, desert grasses, and juniper trees grow in the area. Average annual precipitation is 10 to 20 in. (inch) per year, falling primarily between October and April, much of it as snow. Summer months are hot with temperatures often exceeding 100 °F; isolated thundershowers provide brief cooling.

1/ A WSA is a roadless area or island that has been inventoried by the U.S. Bureau of Land Management and found to have wilderness characteristics as described in Section 603 of the Federal Land Policy and Management Act of 1976 and Section 2(c) of the Wilderness Act of 1964 (78 Stat. 891).

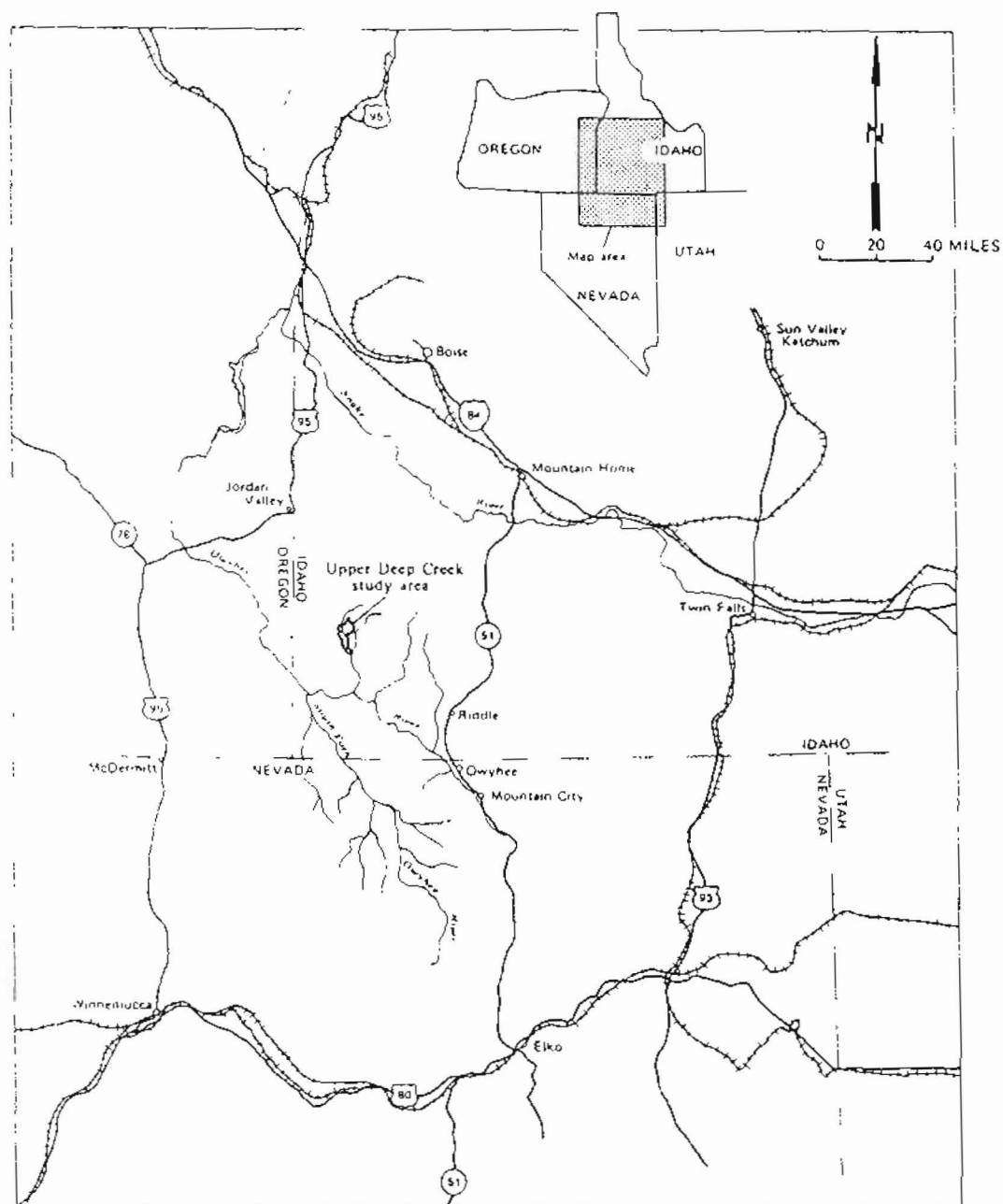


FIGURE 1. – Location of the Upper Deep Creek study area, Owyhee County, ID

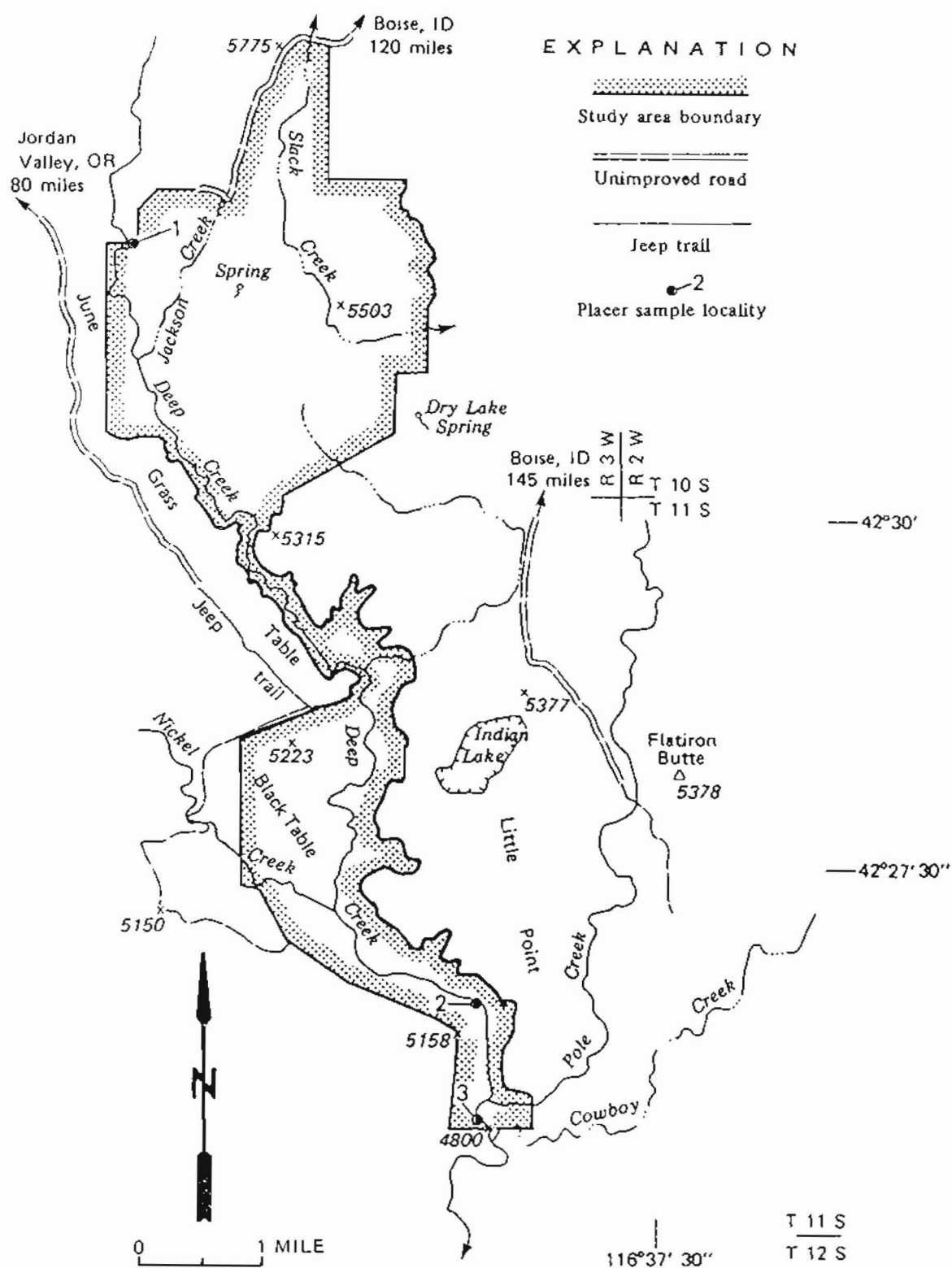


FIGURE 2. — Placer sample localities in the Upper Deep Creek study area, Owyhee County, ID

Previous Studies

There have been few geological studies done in the vicinity of the study area. Most were broad, region-wide investigations or site specific for distant mineral producing areas. Geologic studies of the area and vicinity include those by Ekren and others (1981 and 1984) and Bonnicksen and Breckenridge (1982). A GEM (geology, energy, and mineral) resources report was done by Mathews and Blackburn (1983). Reports on uranium potential for lands which include the study area were prepared by Geodata International, Inc. (1980), Bendix Field Engineering, Corp. (1982), and Union Carbide Corp. (1982) for the Department of Energy during their NURE (National Uranium Resource Evaluation) program. A summary of energy and minerals data pertaining to the study area is included in a draft environmental impact statement on the Jacks Creek Wilderness (U.S. Bureau of Land Management, 1984).

Present Study

Work by the USBM entailed prefield, field, and report preparation phases in 1985 and 1986. Prefield studies, which included library research and perusal of Owyhee County, ID, and BLM mining and mineral lease records, and a search of USBM production records, revealed no claims or recorded mining activity. Consequently, the area was searched in July 1985 by ground and air reconnaissance for evidence of prospecting activity or areas of visible alteration where unrecorded prospecting would most likely have occurred.

Three reconnaissance samples of alluvium were collected from the study area (fig. 2). The samples were screened and then concentrated on a laboratory-size Wilfley table. Resulting heavy-mineral fractions were scanned with a binocular microscope to determine gold and other heavy-mineral content. The gold was recovered by amalgamation. Concentrates were also checked for radioactivity and fluorescence.

ACKNOWLEDGEMENTS

The author is grateful to Fred Anderson, geologist, BLM Boise District, who provided aerial photographs and much useful data, and to Steve Addington, Outdoor Recreation Planner, BLM Boise District, Bruneau Resource Area, who provided information on the study area. Ronald T. Mayerle, physical scientist, Western Field Operations Center, U.S. Bureau of Mines, assisted with the field investigation.

GEOLOGIC SETTING

The study area is within the Owyhee Upland subprovince of the Columbia Intermontane Province - an extensive volcanic plateau. Rocks exposed in and near the area are primarily Miocene, bimodal (rhyolitic and basaltic) volcanic rocks with interbedded, lacustrine (lake) sediments (Ekren and others, 1981).

The oldest rocks in the study area are rhyolitic tuffs and sedimentary rocks of the Juniper Mountain volcanic center. These rocks are overlain in places by Banbury Basalt which forms the resistant rims of the canyons (Ekren and others, 1981 and 1984).

Most of the structural trends (faults?) observed in and near the area generally trend northwest to north; they may be related to the extensional tectonism that created the Basin and Range Province in Nevada. Other structural trends, also probable faults, were noted, including some that trended northeast and east-west; these may be related to near-surface crustal adjustments accompanying or following the eruption of the volcanic rocks.

APPRAISAL OF MINERAL RESOURCES

No mining claims have been located in the study area, no minerals have been produced, and no resources were identified.

Placer Gold

Gold was found in the three samples from sand and gravel bars along Deep Creek. Gold values (at \$400 per troy ounce) were \$0.21, \$0.22, and \$2.72/yd³ (dollar per cubic yard) in samples 1 through 3, respectively (fig. 2). This is higher than the \$0.02/yd³ average typical of the Owyhee canyonland drainages (Gabby, 1985, p. 11). These reconnaissance samples indicate that, near the surface, the gold content is too low in grade and in sand and gravel deposits of insufficient volume to be minable by large volume commercial methods. These methods require gold values of several dollars per cubic yard and volumes of several thousand cubic yards of gravel treated per day. But as is common, the size and number of individual gold particles may increase dramatically in material on or near bedrock, raising the values substantially. Consequently, the area may be attractive for recreational or small-scale commercial suction dredge operations 1/.

Available evidence suggests that the gold came from an unidentified nearby source; the gold is bright, indicating it may have recently been liberated from the host rock, and the surface of the individual gold particles is angular rather than rounded, indicating they had traveled only a short distance. The area drained by Deep Creek northwest of the study area, to within 4 mi of the boundary, was examined previously by the USBM (Leszykowski, 1986), and no gold was found. Therefore, the gold source may lie between the study areas or in the northeastern part of the Upper Deep Creek study area.

1/ Suction dredge: a floating, continuously operating, placer-gold recovery system. Sand and gravel from a river or stream bottom are sucked (powered by a water pump) to the surface through a 2- to 24-inch-diameter flexible hose and run over a sluice box to recover the gold (and other heavy minerals). Small-diameter hose sizes are for prospecting and recreational uses.

Nonmetallic Resources

Volcanic rocks that may be suitable as dimension stone occur in the study area but do not have unique properties that would make them preferable to other more accessible deposits which are closer to markets.

Regionally, diatomite occurs in lacustrine sediments and is found about 5 mi to the south-southeast of the study area (Capstick and Buehler, 1985) in a related geologic environment. However, no diatomite occurrences were found in the study area.

No jasper, chalcedony, or common opal were noted in outcrops, although the geologic environment of the study area is similar to that of nearby wilderness study areas where these minerals were found (Capstick and Buehler, 1985; and Gabby and Mayerle, 1985).

RECOMMENDATIONS FOR FURTHER STUDY

A detailed placer evaluation of the study area is recommended, including evaluation of the alluvial sand and gravel in Deep Creek down to bedrock. A trace-element geochemical evaluation of the north end of the study area is also recommended to determine if the placer gold originates within the study area.

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