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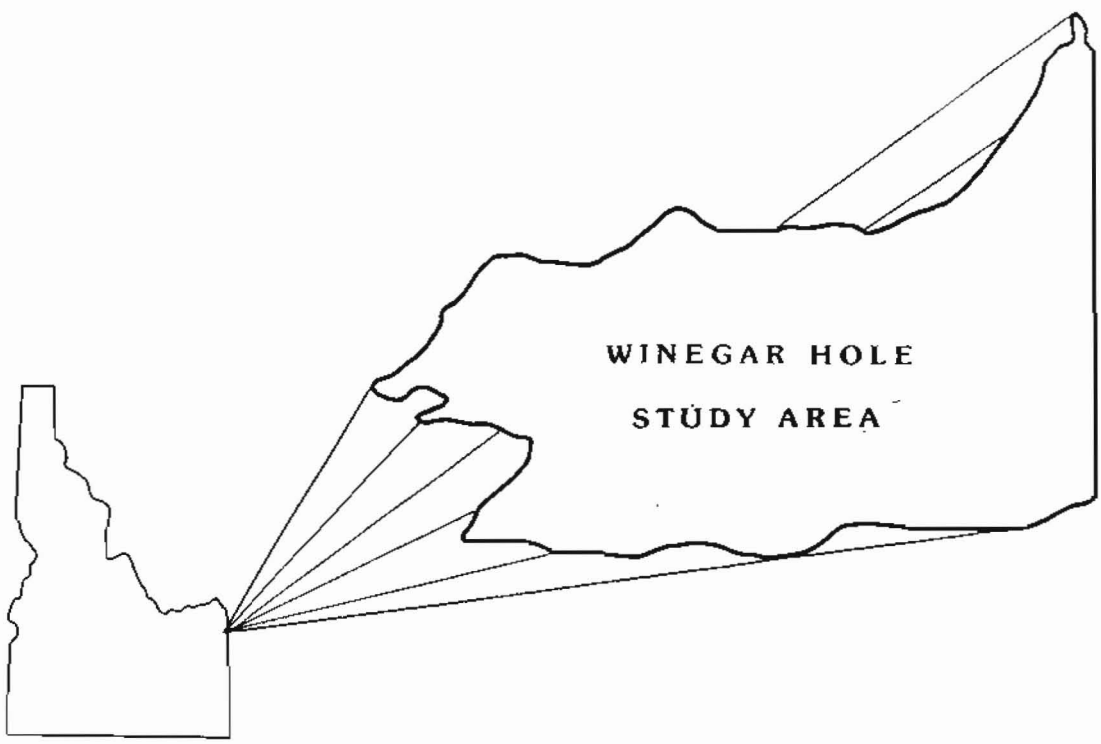
MLA 7-92

Mineral Land Assessment/1992
Open-File Report

Mineral Resources of the Winegar Hole Study Area, Fremont County, Idaho



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16. Abstract (Limit: 200 words)

The U.S. Bureau of Mines studied the 3,500-acre Winegar Hole study area, Idaho, a legislatively proposed (101st U.S. Congress) addition to the Winegar Hole Wilderness, Wyo.; it adjoins the western boundary of the Wilderness at the Idaho-Wyoming border, about 15 mi east of Ashton, Idaho. The study was part of an Idaho Land Assessment Program to provide minerals information for land-use decisions, and ensure domestic mineral supplies.

The study area is an east-west elongated, wooded plateau south of Falls River. Although the area is covered with surficial glacial deposits, it is probably underlain by volcanic flows; light-colored and mafic flow rock were noted in sparse outcrop.

No mines, prospects, mineralized areas, or mineral resources were found in the study area during a literature and field search. The only nearby prospects include geothermal and rock aggregate (volcanic cinder) sites, and several placer claims. Although the Winegar Hole study area lies within a region of potential geothermal resources, no evidence of geothermal activity was observed. Rock in the area does not split into flat slabs, which could be useful as dimension stone, and would require crushing to be used as aggregate. Alluvium (placer) samples contain less than $0.01 per cubic yard gold (at a $350 per oz price); alluvial deposits are too small to contain gold resources.

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Geothermal
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Dimension stone
Volcanic flows
Quartz latite
Andesitic basalt
Alluvium

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Targhee National Forest
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United States Department of the Interior

BUREAU OF MINES

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TAKE PRIDE IN AMERICA

June 8, 19922

Dr. Robert W. Bartlett
Idaho State Geologist
Idaho Geological Survey
University of Idaho
Morrill Hall
Moscow, ID 83843

Dear Dr. Bartlett:

Enclosed is one copy of the following MLA Open-File Report:

MLA 7-92 Mineral Resources of the Winegar Hole Study Area, Fremont County, Idaho

If I may be of further assistance, please let me know.

Sincerely,

Robert B. Hoekzema

Robert B. Hoekzema, Chief
Branch of Resource Evaluation

Enclosure

MINERAL RESOURCES OF THE WINEGAR HOLE STUDY AREA, FREMONT COUNTY, IDAHO

By
Thomas J. Peters

Western Field Operations Center
Spokane, Washington

MLA 7-92

UNITED STATES DEPARTMENT OF THE INTERIOR
Manuel Lujan, Jr., Secretary

BUREAU OF MINES
T S Ary, Director

PREFACE

The Wilderness Act (Public Law 88-577, September 3, 1964) and related acts require the U.S. Bureau of Mines and U.S. Geological Survey to survey certain areas of Federal lands ". . . to determine the mineral values, if any, that may be present . . ." Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a Bureau of Mines mineral investigation of the Winegar Hole study area, Fremont County, Idaho, which includes lands recommended for Wilderness. Mining-related activities in the study area would be severely restricted under Wilderness classification proposed in the 101st U.S. Congress.

This open-file report contains data gathered and interpreted by personnel of the U.S. Bureau of Mines, Western Field Operations Center, Branch of Resource Evaluation, East 360 Third Avenue, Spokane, WA 99202. This report has been approved by the Branch of Mineral Land Assessment, Washington, D.C.

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SUMMARY

The Winegar Hole study area lies about 15 mi east of Ashton, Idaho; the eastern boundary is contiguous with the Idaho-Wyoming border. The 3,500-acre area had been proposed as an addition to the Winegar Hole Wilderness, Wyoming. The study area is a high, wooded plateau south of Falls River. Although the area is mainly covered with surficial glacial deposits, it is probably underlain by volcanic flows; light-colored and mafic flow rocks were noted in outcrop.

No mines, prospects, mineralized areas, or mineral resources were found in the study area during a literature and field search. The only nearby prospects include geothermal and rock aggregate (volcanic cinder) sites, and several placer claims. Although the Winegar Hole study area lies within a region of potential geothermal resources, no evidence of geothermal activity was observed. Rock in the area does not split into flat slabs, which could be useful as dimension stone, and would require crushing to be used as aggregate. Two alluvial (placer) samples contained less than $0.01 gold per cubic yard of gravel (at a $350 per ounce price); alluvial deposits are too small to contain gold resources. No significant metal concentrations were detected in rock samples.

INTRODUCTION

This study is part of the USBM (U.S. Bureau of Mines) Idaho Land Assessment Program to evaluate the mineral resources of priority roadless areas in Idaho. The results of mineral inventories on specific study areas, such as Winegar Hole, provide minerals information needed by the President, the Congress, land management agencies, and ultimately, by the public, to make wise decisions regarding future land management practices. The information also helps fulfill a long-term Bureau of Mines objective to ensure the United States has an adequate, dependable supply of minerals at a reasonable cost.

Geographic Setting

The 3,500-acre Winegar Hole study area, Idaho, was a legislatively proposed addition to the Winegar Hole Wilderness, Wyoming, in the 101st Congress; it adjoins the western boundary of the Wilderness at the Idaho-Wyoming border, about 15 mi (mile) east of Ashton, Idaho (fig. 1). The area is reached by U.S. Highway 20, northeast from Idaho Falls or southwest from West Yellowstone, Mont., to USFS (U.S. Forest Service) Road 261, 1 mi south of Ashton, then east about 15 mi to the study area; Road 261 forms the south boundary (fig. 2).

The study area is mainly a high, east-west elongated plateau lying between two deeply incised, westward-flowing streams (fig. 3): Falls River on the north, and Squirrel Creek on the south. Boone Creek bisects the area, but has not eroded a deep valley like streams to the north and south. Elevations range from about 6,000 ft (feet) to over 6,400 ft. The area is mainly wooded with lodgepole pine, Douglas fir, and lesser Engleman spruce, whitebark pine, and subalpine fir. Seasonally marshy prairie makes up about 20 percent of the area.

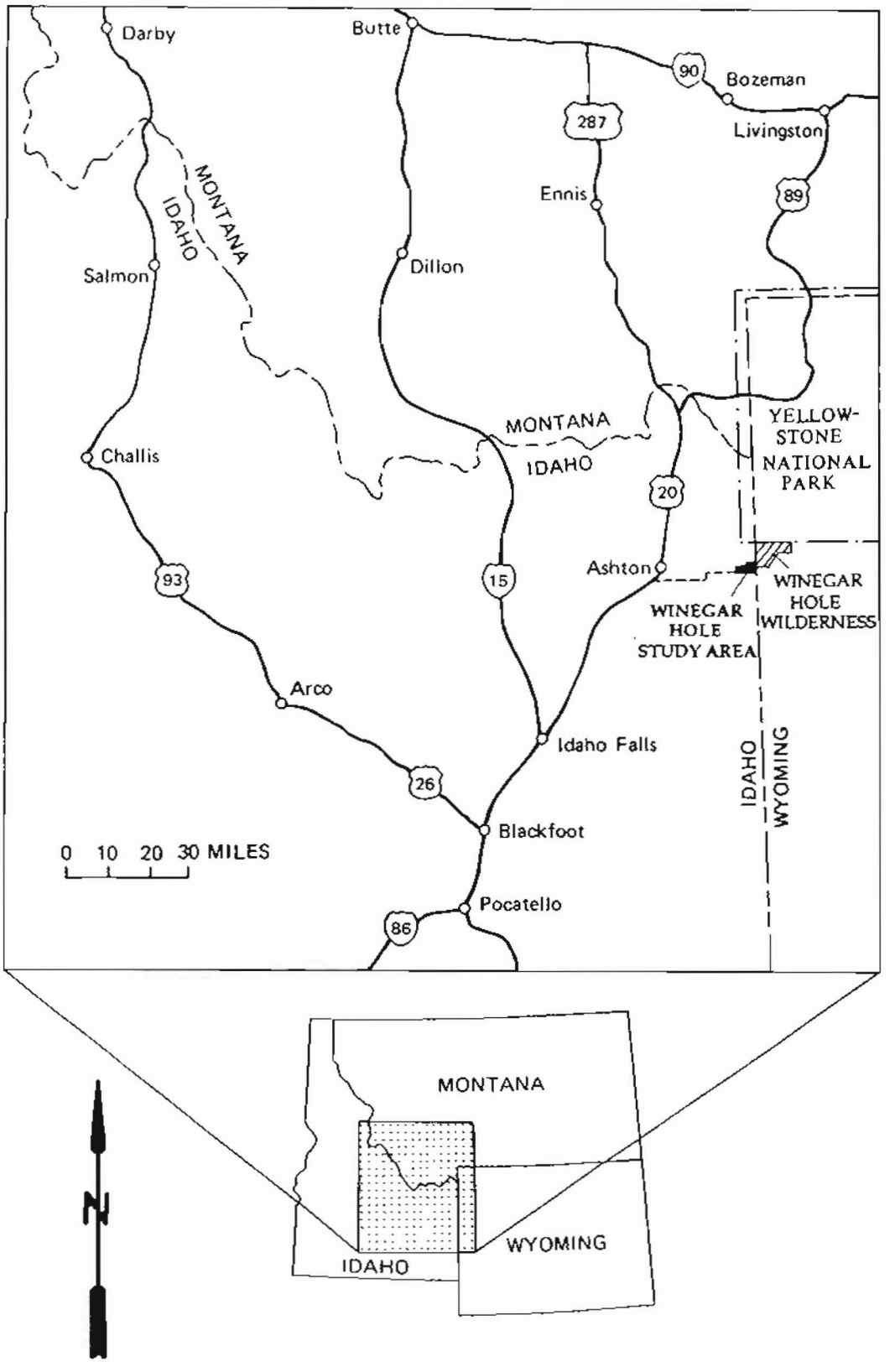

Figure 1.- Location of the Winegar Hole study area, Fremont County, Idaho

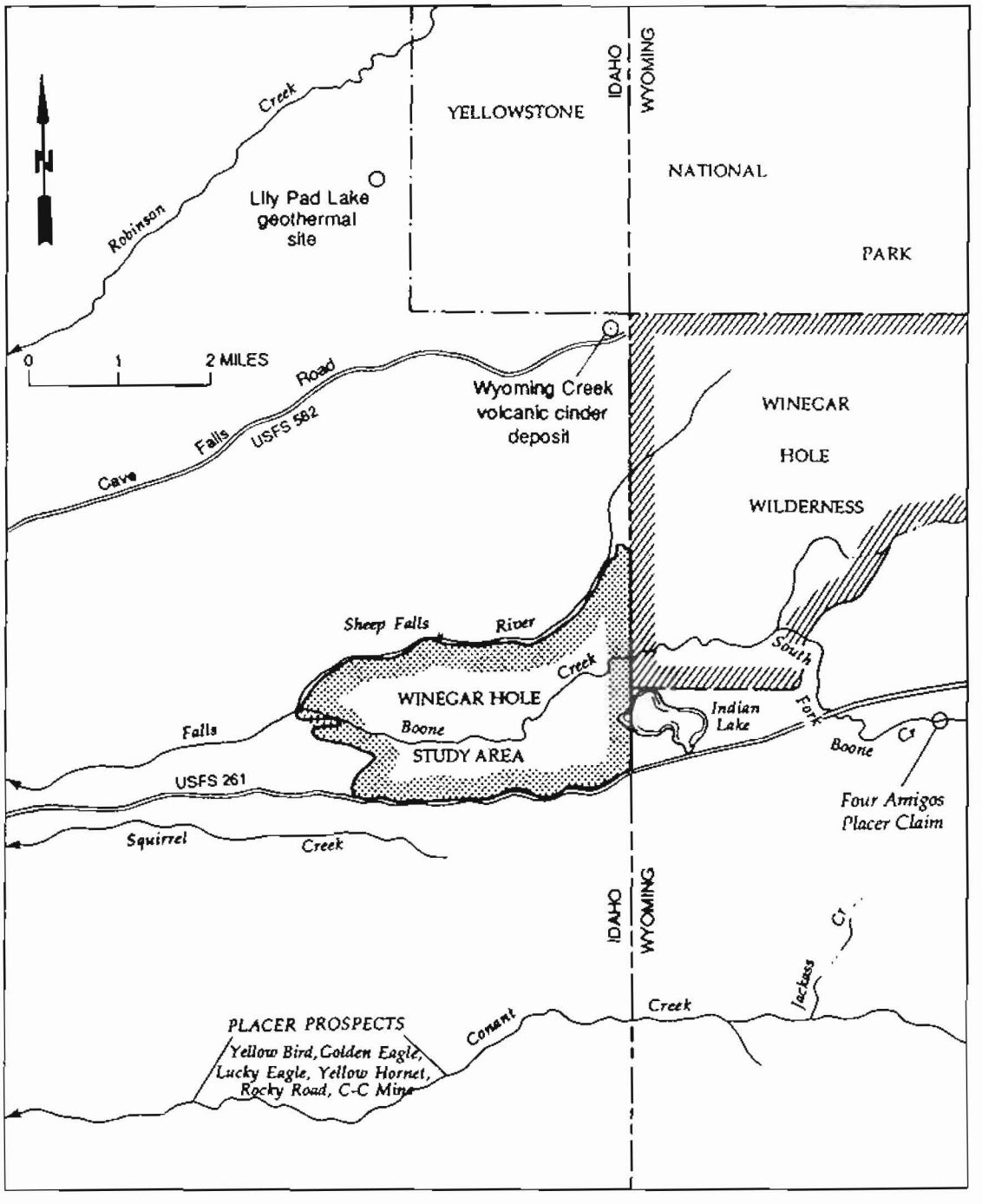

Figure 2.-Prospects, and park and wilderness lands near the Winegar Hole study area

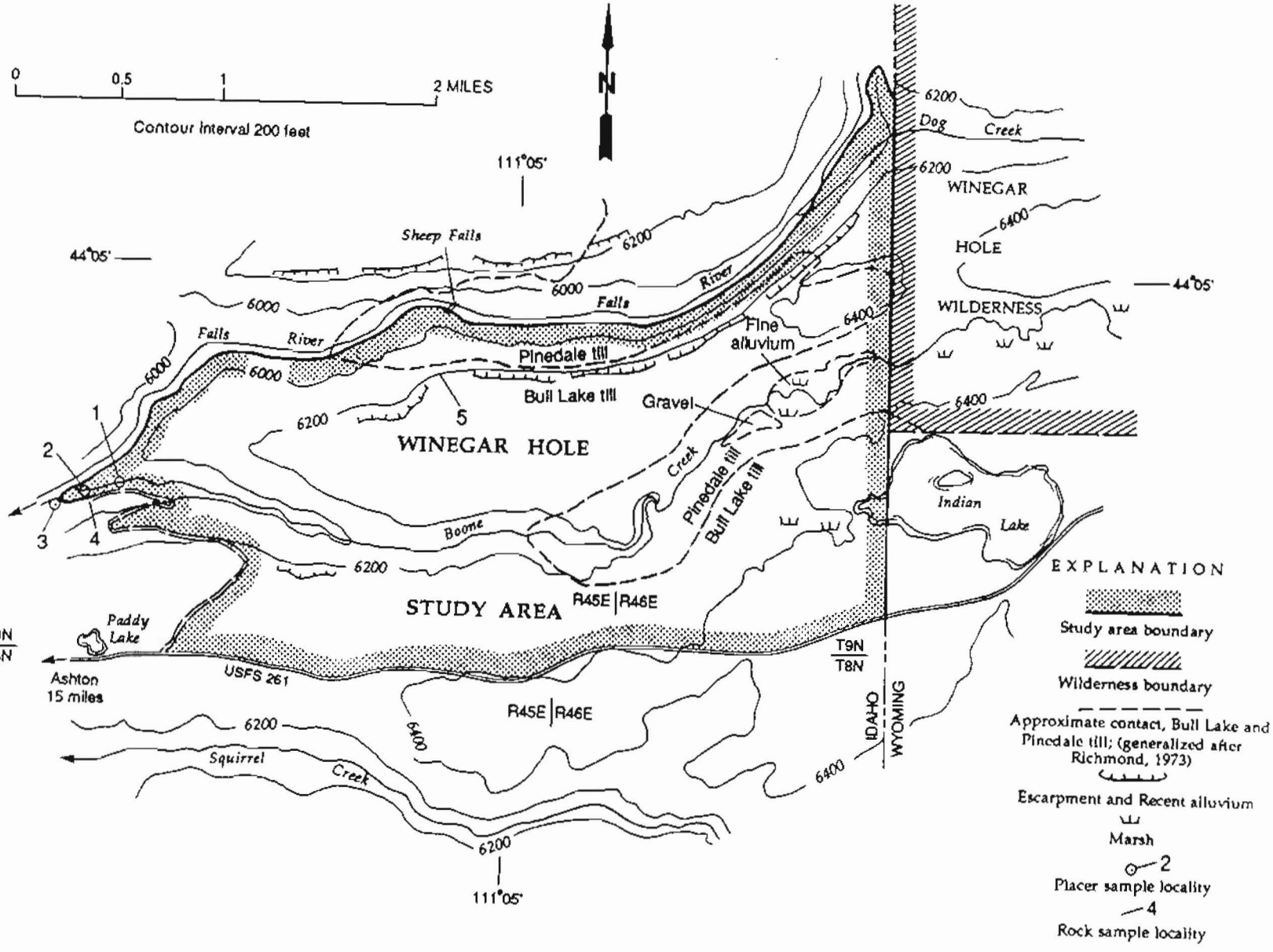

Figure 3.-Sample localities and geology of the Winegar Hole study area

The climate consists of frigid, long, and snowy winters, and short, dry summers. Although affected by elevation, the mean minimum temperature in January is less than 0°F (Fahrenheit), the mean July maximum is greater than 80°F; the warmest months are June through August, with a normal of about 60°F. Annual precipitation is over 30 in. (inch); the driest months are July through September, 0.25 to 1.00 in. rain per month; December is the wettest, followed by January, when precipitation (as snow) ranges between 2 and 5 in. per month (National Oceanic and Atmospheric Administration, 1974, p. 647-655).

Previous Studies

Regional and areal geology relevant to the Winegar Hole study area has been presented by Bond (1978), Christiansen (1989), Christiansen and Blank (1972), Fournier and others (1976), Richmond (1973), and Hamilton (1965). Information on mineral properties in the region are found in Elevatorski (1975), Griner (1972), Mitchell and Bennett (1979), and USBM MILS (Mineral Industry Location System) files. Three reconnaissance uranium resource evaluation studies of the Ashton 1° X 2° quadrangle, sponsored by the U.S. Department of Energy, were carried out by Aero Service Division, Western Geophysical Company of America (1979), Meiiji Resource Consultants (1982), and Shannon (1980).

Present Study

The mineral resource study included prefield, field, and report preparation phases. Prefield preparation included a search of pertinent geological and mining literature, perusal of Fremont County mining records, and examination of BLM (Bureau of Land Management) master title plats and current mining claim recordation data. Field work was conducted during 1991. A search was made for all mines, prospects, and mineralized areas in, and near, the study area, and included foot and helicopter reconnaissance.

Five samples were taken: three alluvial (reconnaissance pan) and two rock samples. Pan samples consisted of three 14-in. level panfuls (0.012 cubic yard) of alluvium partially concentrated in the field. Rock samples were chips taken at random intervals from homogeneous outcrops.

Partially field-concentrated alluvial samples were checked for fluorescence and radioactivity, further concentrated on a laboratory-sized Wilfley table at USBM's WFOC (Western Field Operations Center), Spokane, Wash., and examined for free gold and other heavy minerals. A split of alluvial sample concentrates, and rock samples, were sent to IGAL, Inc., Analytical Services Division, Cheney, Wash., for geochemical analysis of 11 elements[1/]. Digestion for trace elements analysis was by aqua regia; sample splits prepared for whole rock analysis were fused with lithium tetra- and lithium meta-borate at 1000° C (Celsius). Trace element concentrations were

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[1/]Au (gold), Ag (silver), Cu (copper), Zn (zinc), As (arsenic), Sb (antimony), W (tungsten), Mn (manganese), Ba (barium), Mo (molybdenum), and Hg (mercury).

determined by AA (atomic absorption), except As and Sb were determined by organic extraction, and W, Ba, and Mo were by ICP (inductively coupled plasma-emission spectroscopy). Whole rock analysis for major rock-forming elements was by AA, except Ca, Mg, and Ti (titanium) were by ICP; concentrations were converted to percent of equivalent oxide.

ACKNOWLEDGEMENTS

Walter Groves, District Ranger, Island Park Ranger Station, U.S. Forest Service, provided helpful logistical advice, and John Pruess, Minerals Specialist, Targhee National Forest, St. Anthony, Idaho, provided minerals-related information. Elizabeth Hill ably assisted in the field.

MINING HISTORY

There is no evidence of mineral prospects or mining activity within the Winegar Hole study area. Nearby energy and mineral resource properties (fig. 2) include Lily Pad Lake geothermal prospect (Young and Mitchell, 1973, p. 26), Wyoming Creek volcanic cinder deposit, and placer prospects along Conant Creek (current BLM mining claim recordation data). The Wyoming Creek cinder deposit is owned and operated intermittently by the USFS.

Placer activity along Conant Creek dates back to 1894, when Charles St. Rafferty worked claims at the mouth of Jackass Creek southeast of the study area, in Wyoming (Fremont County mining records, Book B, p. 259); records also indicate minor lode activity along Conant Creek. A single current placer claim, the Four Amigos, is located on the South Fork of Boone Creek, 3.5 mi east of the study area, in Wyoming.

GEOLOGIC SETTING

The Winegar Hole study area appears to be underlain by interbedded quartz latite (and probably rhyolite) flows of the Yellowstone Plateau, and basaltic andesite flows, which are probably related to mafic volcanism of the Snake River Plain. Rock outcrops in the study area are scarce, however, and bedrock geology is poorly known. Quartz latite and basaltic andesite were the only rock types observed.

Surficial Pleistocene unconsolidated deposits cover bedrock in most places (fig. 3). The deposits, which were mapped by Richmond (1973), consist mainly of glacial till of the Bull Lake glaciation; however, two glacier tongues of latest Pinedale glaciation deposited younger till for 1.5 mi along eastern stretches of Falls River and Boone Creek within the study area. Two patches of alluvium, Pinedale gravel and Recent fine-grained humic alluvium, occur along the upper reaches of Boone Creek in the study area. The alluvial deposits are several acres in size, and only a few feet thick.

MINES AND PROSPECTS

No mines, prospects, or mineralized areas were found in the Winegar Hole study area. Two rock samples were collected from outcrops, one each from light-colored and mafic flows, but observation and analyses (table 1) did not indicate secondary, mineralization-related, alteration. Quartz latite and basaltic andesite seen in the study area have no physical or chemical properties that would impart special value as dimension stone, such as regular splitting planes or attractive iron stains; the rock appears to be only suitable to the most basic types of applications, such as rip-rap and crushed road aggregate.

Three reconnaissance-pan alluvial samples were taken primarily to check for free (placer) gold in study area drainages; samples 1 and 2 were taken near the mouth of Boone Creek, and sample 3 was taken from the south bank of Falls River, about 500 ft below the mouth of Boone Creek. Traces of very fine free gold, worth less than $0.01 per cubic yard of gravel at a $350 per ounce gold price, were found in two samples.

No evidence of geothermal activity was observed, but the study area is within lands classified as potentially valuable for geothermal exploration (Young and Mitchell, 1973, fig 3). Measured geothermal water at the Lily Pad Lake site, 5 mi north of the study area (fig. 2), is 17.5°C (63.5°F), below the 31°C (88°F) minimum temperature required to generate electric power by the binary system (Rinehart, 1980, p. 199), but temperatures at depth may be adequate for agricultural or industrial heating. Ashton Warm Springs, about 15 mi west (Young and Mitchell, 1973, p. 26), at 41°C (106°F) is warm enough for a binary plant. Many hot springs in nearby Yellowstone National Park are hot enough for power production (Fournier and Truesdell, 1973), some by dry steam, the most efficient medium of geothermal power generation (Rinehart, 1980, p. 196).

MINERAL RESOURCE EVALUATION

There are no identified mineral resources (U.S. Bureau of Mines and U.S. Geological Survey, 1980) in the study area, and no evidence of metallic mineralization, such as hydrothermal precious- or base-metal deposits, was encountered. Bedrock observed is only suitable for the most basic high bulk and low end value applications, such as crushed aggregate, but numerous sources for crushed stone occur closer to markets. However, observations were limited by an extensive cover of surficial deposits.

The possibility of economic placer deposits appears remote. Although free gold was detected in drainages, it occurs in concentrations worth less than $0.01 per cubic yard of gravel. Also, only a very small volume of alluvial deposits is known to occur along the upper reaches of Boone Creek in the study area. An economic placer deposit would require millions of cubic yards of alluvium containing several dollars per cubic yard in gold.

The study area occurs in a region of extensive, 'world class' geothermal resources, an ecologically preferred energy source. Development of the best of these resources

TABLE 1. -- Sample analyses from the Winegar Hole study area, Fremont County, Idaho

[Gold at a $350 per troy ounce, ppb - parts per billion, cu yd - cubic yards, mg - milligram, mm - millimeter; cob - cobble, peb - pebble, bl - black, snd - sand, slt - silt, < - less than, > - greater than, LOI - loss on ignition]

Part 1. -- Trace-element analyses:

Figure 3 Sample no.	Description (magnetic/nonmagnetic (grams))	Ounces/ yd free Au 1/	Value/ yd ($350/oz)	In parts per million, except as noted											
				Au (ppb)	Ag	Cu	Pb	Zn	As	Sb	W	Mn	Ba	Mo	Hg (ppb)
	Alluvial reconnaissance pan samples [three level 14-in. pansful (0.012 yd) each]:														
1	10% cob; 25% peb > and 25% < pea-size; 25% snd; 14% slt, 1% bl snd. 70% quartz latite, 20% basalt, 10% quartz and chalcedony. [2.4/70.7]	None	None	110	<0.2	9	3	205	<5	<5	<10	505	<100	7	<10
2	5% cob; 50% peb > and 20% < pea-size; 20% snd, 5% slt, 3% bl snd. Rock types like sample 1. [1.5/99.9]	0.00008	$0.003	<5	<0.2	11	2	116	<5	<5	<10	403	<100	4	<10
3	25% peb >, 20% < pea-size; 32% snd; 20% slt; 3% bl snd. Rock types like sample 1. [6.2/83.3]	0.000003	$0.001	575 2/	<0.2	7	5	197	<5	<5	<10	396	<100	2	10
	Random-chip rock samples:														
4	Quartz latite porphyry: alternate gray glass and cream-colored 0.25-in.-thick flow bands; 0.25-in.-long quartz phenocrysts.			<5	<0.1	3	12	98	<5	<5	<10	282	<100	2	<10
5	Basaltic andesite: medium-gray, weathers to grayish brown; < 5% small vesicles average 0.12 in. across.			<5	<0.1	28	4	51	<5	<5	<10	470	<100	<1	<10

Part 2. -- Whole rock (element oxide) analyses:

Sample no.	Description	In percent											
		Al_2O_3	CaO	Fe_2O_3 3/	K_2O	MgO	MnO	Na_2O	P_2O_5	SiO_2	TiO_2	LOI	Totals
4	Latite porphyry (described above)	12.63	1.31	3.04	5.23	0.23	0.043	3.85	0.08	73.28	0.221	0.78	100.46
5	Basaltic andesite (described above)	13.62	9.37	15.05	0.75	7.43	0.19	2.11	0.53	48.75	2.35	0.26	100.30

1/ Sample 2 - 0.098 mg of free gold recovered; sample 3 - 0.242 mg of free gold recovered.
2/ 575 ppb = 0.17 oz/ton.
3/ Total Fe as Fe O .

is unlikely, because they occur in Yellowstone National Park. There is no direct evidence of greater likelihood of geothermal resources within the relatively small study area than the vast terrane of geothermal potential that surrounds it. There are many higher priority geothermal targets within the region.

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