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TERRITORY OF ALASKA
DEPARTMENT OF MINES

REPORT ON THE EXAMINATION OF THE GREATHOUSE COPPER PROSPECT,
HEALY QUADRANGLE

et 67-120

by

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Clarence Greathouse of Fairbanks began prospecting along the Denali Highway east of Susitna River in the Spring of 1957. During the summer of 1957 he discovered and staked the outcrop described in this report. His prospect was examined on August 18, 1957, by Robert H. Saunders, Territorial Mining Engineer; this report is written from notes taken during that examination.

The Greathouse copper prospect is at $63^{\circ} 05'$ N latitude and $147^{\circ} 22'$ W longitude in the southeast corner of the Healy Quadrangle. It lies at the head of Fault Creek, a left-limit tributary to lower Windy Creek; Windy Creek flows into Susitna River from the east three-fourths of a mile upstream from the Denali Highway bridge.

The discovery outcrop is five miles from the Denali Highway. A four-wheel-drive vehicle can travel three miles of this distance, and the remaining two miles must be covered on foot. Only a small amount of bulldozer work would be required to make the last two miles of the trail passable for four-wheel-drive vehicles. From the prospect it would then be, by road: 75 miles to Paxson on the Richardson Highway, 55 miles to Cantwell on the Alaska Railroad, and 270 miles to Valdez, a year-round seaport. The Denali Highway is a new road that was opened to the public for the first time in July, 1957. It is maintained by the Bureau of Public Roads and will be open each year from June to October.

The geology of the area in which the prospect lies has been described in U. S. Geological Survey Bulletin 498, HEADWATER REGIONS OF GULKANA AND SUSITNA RIVERS, ALASKA, by Fred H. Moffitt, and in

U. S. Geological Survey Bulletin 668, THE NELCHINA-SUSITNA REGION, ALASKA, by Theodore Chapin. The rocks on the north side of Windy Creek are predominately sedimentary rocks of Upper Triassic age, and those on the south side are predominately basaltic and andesitic lava flows, probably of Lower Triassic age. The lavas are in part amygdaloidal; the cavity fillings consist of calcite, chloritic material, and quartz. Interbedded with the flow rocks are argillites, tuffs, and tuffaceous conglomerates. The sedimentary rocks north of upper Windy Creek have been intruded by diorite of Jurassic age.

The prospect is a copper-bearing quartz vein within, and parallel to, a fault zone that strikes N 45° W and dips vertically. The fault zone can be traced for three-fourths of a mile, and its width varies from one foot to six feet. The width of the copper-bearing vein varies from one inch to 30 inches. At the discovery monument at the head of Fault Creek, the fault zone is about six feet wide, and the copper-bearing vein within the zone is 30 inches wide (Sample No. 12). From this point the vein tapers sharply; 25 feet to the southeast the width is one inch (Sample No. 11). To the northwest the vein tapers less abruptly, but it apparently narrows to one inch within a distance of 75 feet. The vein can be traced along the fault zone for about 700 feet, but its width throughout this distance appears to be only one inch except for the 30-inch-wide part of the vein near the discovery monument.

The copper minerals present are chalcopyrite, bornite, malachite, and azurite.

One wall of the fault zone forms a vertical cliff face that

stands as much as 50 feet above the mineralized outcrop; on the other side of the outcrop the mountainside drops steeply to the talus slopes at the head of Fault Creek. The outcrop is at 4740 feet altitude by aneroid barometer, and the small lake at the head of Fault Creek is at 4200 feet altitude. The rugged topography makes the examination of the outcrop somewhat difficult.

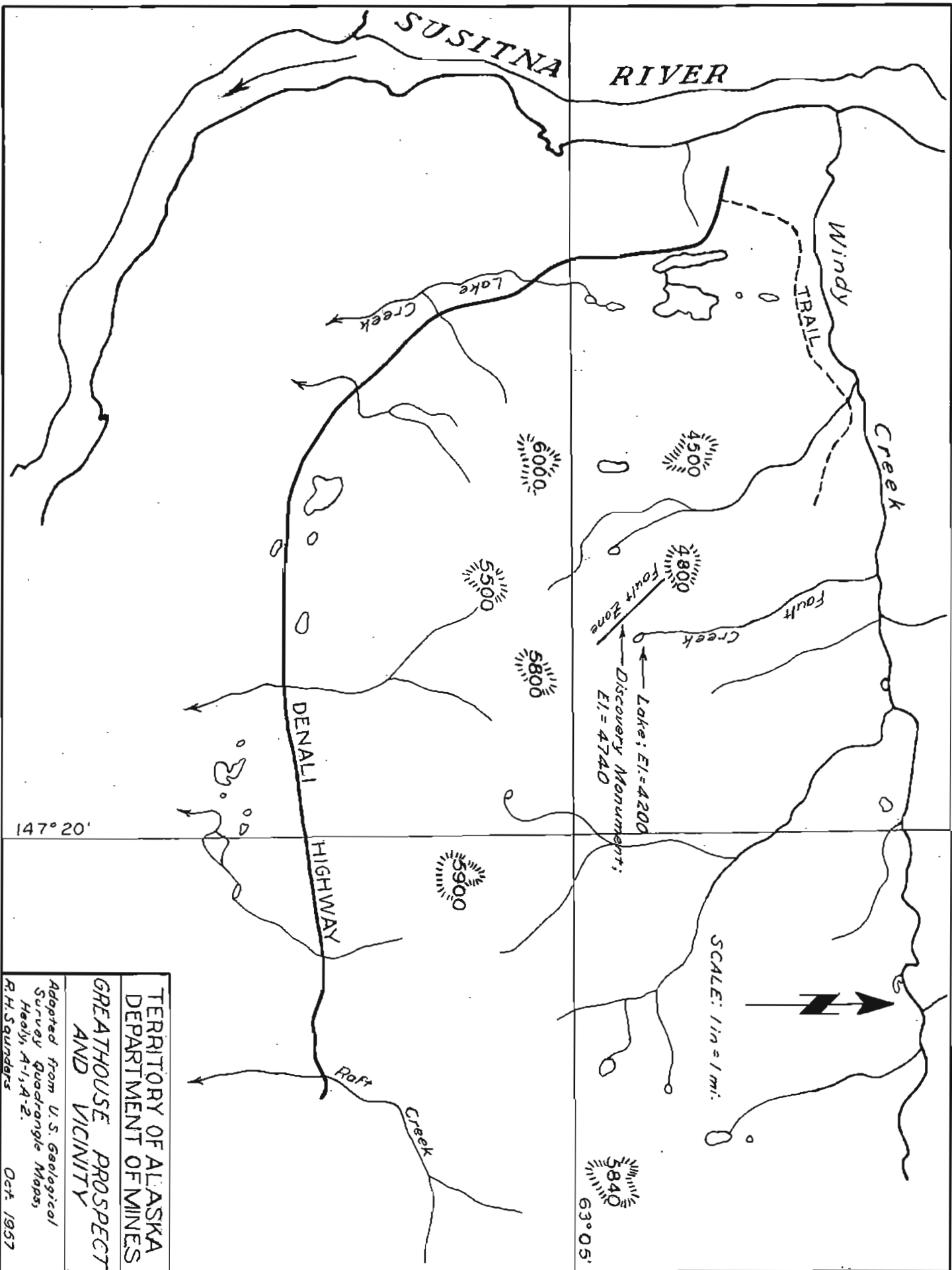
Three samples were taken during this examination. They were assayed at the Territorial Department of Mines Assay Office at College by Donald Stein, Assayer, and the results were as follows:

ASSAYS OF SAMPLES FROM THE GREATHOUSE PROSPECT

Sample No.	Width Inches.	Per Cent Copper	Ounces per Ton		Location
			Gold	Silver	
11	1.0	5.16	Nil	0.60	Beside discovery monument.
12	30.0	6.60	Nil	0.98	25 ft NW of No. 11.
13	Grab sample	1.22	Tr	Tr	30 ft SE of No. 11.

Sample No. 13 was tested for nickel; none was present.

The present exposures do not justify much work on this prospect because the vein appears to be too narrow to be minable. There is a remote possibility that the wide part of the vein is the top of an ore-shoot. It should be possible to drill and blast that part of the outcrop without much expense, thereby exposing the vein perhaps 20 feet below the present surface. If there is then any indication that the wide part of the vein is the top of an ore-shoot, further exploration should be considered.



**TERRITORY OF ALASKA
DEPARTMENT OF MINES
GREATHOUSE PROSPECT
AND VICINITY**

Adapted from U.S. Geological
Survey Quadrangle Maps,
Healy, A-1, A-2.
R.H. Saunders
Oct. 1957