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GEOLOGICAL SURVEY
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Dr. Phillip L. Merritt, Assistant Manager
Raw Materials Operations
U. S. Atomic Energy Commission
P. O. Box 30, Ansonia Station
New York 23, New York

Dear Phil:

Transmitted herewith are copies 3 through 7 of Trace Elements Investigations Report 57, Part 2, "Trace elements reconnaissance in the Lower Coleen River valley, Upper Yukon Division, Alaska", by M. G. White, February 1950.

Other copies of this report are being distributed as shown on the enclosed distribution sheet.

Sincerely yours,

E. S. Larsen, Jr.

W. H. Bradley
Chief Geologist

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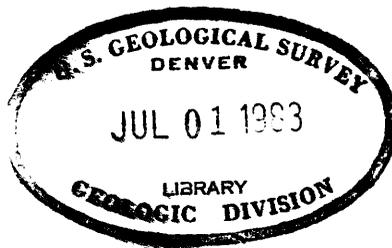
SHORTER CONTRIBUTIONS TO ALASKAN

TRACE ELEMENTS STUDIES

FOR 1948

1950

Trace Elements Investigations Report 57



UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

TRACE ELEMENTS RECONNAISSANCE IN THE
LOWER COLEEN RIVER VALLEY, UPPER YUKON DIVISION, ALASKA

by

M. G. White

February
1950

Trace Elements Investigations Report 57 - Part 2

USGS-TEI Rept. 57, Pt. 2
Consisting of 5 pages
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Part 2

TRACE ELEMENTS RECONNAISSANCE
IN THE LOWER COLEEN RIVER VALLEY,
UPPER YUKON DIVISION, ALASKA

By M. G. White

ABSTRACT

The highest radioactivity value obtained in a traverse of shales in the Middle Paleozoic section of the lower Coleen River is 0.003 percent equivalent uranium. Traverses on pre-Cambrian schists at Rabbit Mountain were made with negative results.

INTRODUCTION

Location of area

The Coleen River, a north tributary of the Porcupine River, heads in the Brooks Range of northern Alaska and enters the Porcupine about 50 miles air-line west of the Alaska-Yukon boundary. (See insert to fig. 1.)

Purpose and scope of investigation

During the Porcupine River investigation in 1948 / a 10-day

/ White, M. G., Trace Elements investigations along the Porcupine River, Alaska: U. S. Geol. Survey Trace Elements Investigations Rept. 55, 1949.

side trip was made up the Coleen River to investigate reported outcrops of sedimentary rocks. A party of four men ascended the river to a point 75 miles above its mouth, where J. E. Owens, the only in-

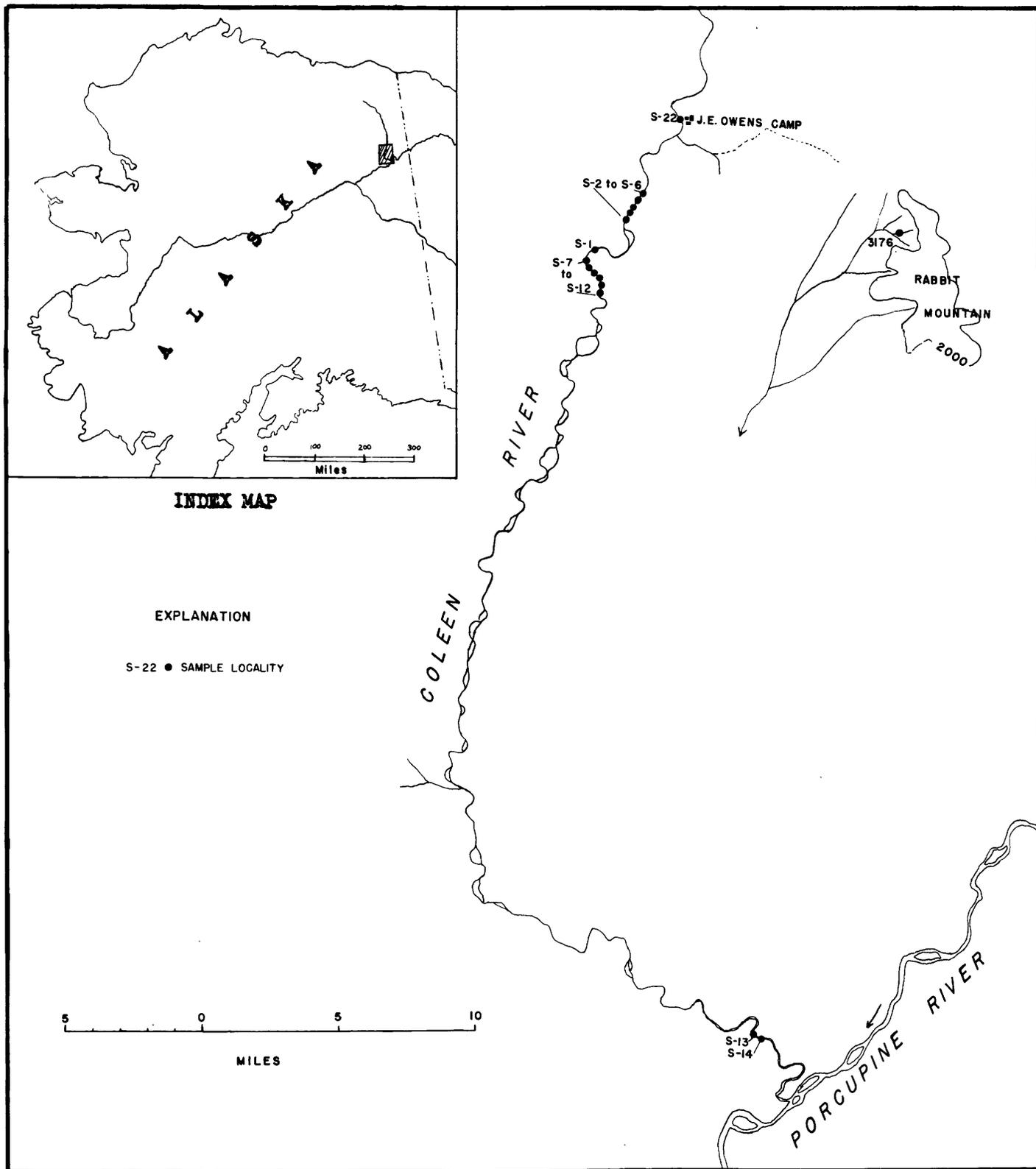


FIGURE 1. SKETCH MAP OF THE LOWER COLEEN RIVER, ALASKA

habitant of the valley, maintains a permanent residence. This area had never before been explored by the Geological Survey.

Area investigated

All exposures along the river from J. E. Owens' camp to the mouth of the Coleen were tested for radioactivity, and most of them were sampled. In addition, measurements of radioactivity were made on the slopes of Rabbit Mountain, 15 miles east of Owens camp. In table 1 are recorded radioactivity values of all samples collected during this investigation.

GEOLOGY

The present investigation should be considered a geological exploration-reconnaissance of the lower Coleen River, as no geological information was available from the area prior to this investigation.

Lower Coleen River

No attempt was made to measure any stratigraphic sections or to make any detailed geological studies or maps---all effort being directed solely to the detection of possible radioactive deposits.

The rocks on the lower Coleen River consist of a series of gray, black, and red shales, slate with some limestone and siltstone, and an abundance of light-gray chert in beds up to 20 feet thick. Throughout the series are found dikes and sills of basic igneous rock. There is a distinct similarity between the rocks on the Coleen

River and those to the west in the Sheenjek River valley, which Mertie / tentatively classifies as "Devonian or Carboniferous".

/ Mertie, J. B., Jr., The Chandalar-Sheenjek district: U. S. Geol. Survey Bull. 810-b, p. 119, 1929.

As no attempt was made at geologic mapping, figure 1 merely shows the locations of most of the outcrops that were tested and from which samples were collected.

Rabbit Mountain

Two and a half days were spent investigating Rabbit Mountain, about 15 miles east of Owens camp. This mountain had been locally reported to be a mass of granite, but traverses along most of its northwest side showed it is composed of schist and slate, similar to the pre-Cambrian rocks along the international boundary, about 30 miles east of Rabbit Mountain. No mineralization was found associated with two granite dikes that intrude the schist.

TRACE ELEMENTS INVESTIGATIONS

Foot traverses with Geiger-Mueller counters were made along all accessible exposures of bedrock and talus on the Coleen River and at Rabbit Mountain. No significant radioactivity was detected anywhere. The samples listed in table 1 are those brought back to the laboratory for a final, conclusive check.

J. E. Owens showed the writer a report of a spectographic

analysis made by the Aluminum Company of America on material, from somewhere on the Coleen River, that contains 0.01 to 0.1 percent gallium. A copy of the report is in Alaskan Trace Elements files. No information has yet been obtained from Owens as to where he found the material.

Table 1

Radioactivity values for samples
collected in Coleen River valley in 1948.

File no.	Field no. (48AWe)	Percent equiv- alent uranium in crushed rock	Location
S-1	1	.002	Upper Coleen, black shale cut by basic dikes.
S-2	2(1)	.002	Black shale in section on Coleen below Owens camp.
S-3	2(2)	.002	Black shale in section on Coleen below Owens camp.
S-4	2(3)	.002	Black shale in section on Coleen below Owens camp.
S-5	2(4)	.002	Black shale in section on Coleen below Owens camp.
S-6	3	.000	Black shale in section on Coleen below Owens camp.
S-7	16	.002	Black shale from section on Coleen 3 miles air-line below Owens camp.
S-8	17	.003	Black shale from section on Coleen 3 miles air-line below Owens camp.
S-9	18	.002	Black shale from section on Coleen 3 miles air-line below Owens camp.
S-10	19	.002	Black shale from section on Coleen 3 miles air-line below Owens camp.
S-11	20	.002	Black shale from section on Coleen 3 miles air-line below Owens camp.
S-12	23	.002	Black shale from section on Coleen 3 miles air-line below Owens camp.
S-13	29	.003	Black shale $3\frac{1}{2}$ miles air-line above Porcupine River
S-14	31	.003	Black shale $3\frac{1}{2}$ miles air-line above Porcupine River
S-22	44	.000	Black shale Coleen River donated by J. E. Owens
3176	43	.001*	Stream concentrate from Rabbit Mountain.

*Heavier-than-bromoform mineral fraction.