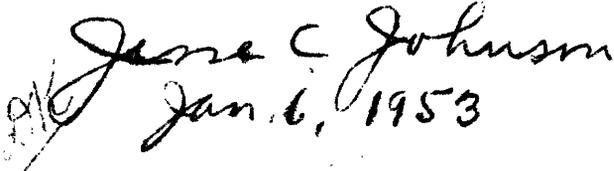


RECLASSIFICATION AUTHORIZATION

In accordance with the authority delegated to me by memorandum from the General Manager, dated December 6, 1948, subject, "Security Procedures and Policies relating to the Domestic Raw Materials Program," and based on criteria for determining classification, as outlined in Appendix A attached thereto, the document listed below is reclassified as indicated.

Document and Title Description	Present Classification	Revised Classification
USGS Report TEI-42 Part I "Trace elements investigations in the Grant Creek area, Yukon Region, Alaska," by P. L. Killeen and M. G. White, October 4, 1949	OFFICIAL USE ONLY - UNCLASSIFIED	
January 6, 1953		 Jan 6, 1953
Date	Jesse C. Johnson, Director Division of Raw Materials	



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

APR - 2 1953

AEC - 1006/3

MEMORANDUM

To : C. C. Towle, Jr.
Division of Raw Materials
Denver, Colorado

From : Security Officer, Trace Elements Program

Subject: Declassification of Trace Elements Investigations
Report 42-Pt. 1

Enclosed is a copy of Reclassification Authorization No. 79 which was sent to us by the Atomic Energy Commission. Our records show that copy 6 of Trace Elements Investigations Report 42-Pt. 1 was sent to you. Please reclassify your copy in accordance with the reclassification authorization.

JHE
John H. Eric

Enclosure: RA No. 79

Copy to: C. C. Towle, Jr.
P. L. Merritt
J. O. Hosted



~~FOR OFFICIAL USE ONLY~~

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

DEC 29 1949

3
LSC-268/0

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:

Enclosed are copies 2, 4, and 5 of Trace Elements Investigations Report 42 (Shorter contributions to Alaskan trace elements studies for 1946), Part 1, "Trace elements investigations in the Grant Creek area, Yukon region, Alaska", by P. L. Killen and W. G. White, October 1949.

Sincerely yours,

Thomas B. Dolan

Assistant Director

Enclosures 3

~~FOR OFFICIAL USE ONLY~~

JAN 09 2001

(200)
T672
no 42
part 1

~~FOR OFFICIAL USE ONLY~~

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SHORTER CONTRIBUTIONS TO ALASKAN
TRACE ELEMENTS STUDIES

1946



Part I

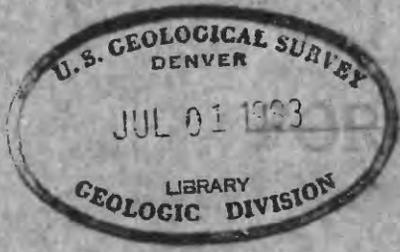
TRACE ELEMENTS INVESTIGATIONS IN THE GRANT CREEK AREA,
YUKON REGION, ALASKA

by

P. L. Killen and M. G. White

October 4, 1949

Trace Elements Investigations Report No. 42



~~FOR OFFICIAL USE ONLY~~



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

USGS-YRI Rept.-42, Part 1
Consisting of 7 pages
Copy No. 6 of 10 copies
Series A
Issued to AEC Denver Colo.

The distribution (Series A) of this report is as follows:

Copies 1 and 3 AEC, Washington (J. K. Gustafson)
Copies 2, 4, 5 AEC, New York (P. L. Merritt)
Copy 6 AEC, Denver, Colo. (G. C. Towle, Jr.)
Copy 9 AEC, Spokane, Wash. (H. E. Thurlew)
Copy 10 AEC, Grand Junction, Colo. (W. G. Peters)
Copies 7, 8 U. S. Geological Survey

FOR OFFICIAL USE ONLY

TITLES OF PARTS

Part I (in this volume)

Trace Elements Investigations in the Grant Creek area,
Yukon region, Alaska

By P. L. Killeen and M. G. White

Part II (in preparation)

Trace Elements investigations on the south fork of Quartz Creek,
northeastern Seward Peninsula, Alaska

By P. L. Killeen and M. G. White

CONTENTS PART I

	Page
Abstract	1
Introduction	1
Purpose and scope of investigation	1
Location of area	2
Geology	2
Radioactivity	3
Location of tests	4

TABLE

Table 1	Data on placer concentrates from Grant and Tozi- morah Creeks, Alaska	7
---------	--	---

ILLUSTRATION

	Following Page	
Figure 1	Drainage map of the Grant Creek area, Yukon region, Alaska	2

FOR OFFICIAL USE ONLY

Part 1

TRACE ELEMENTS INVESTIGATION IN THE GRANT CREEK AREA,
YUKON REGION, ALASKA

By F. L. Killeen and W. G. White

ABSTRACT

Field search in August 1946 failed to locate a reported occurrence of float from pitchblende veins in the Grant Creek area north of the Yukon River about 30 miles west of Tanana in central Alaska. Mr. Walter Fisher, placer-gold miner on Grant Creek, now deceased, reported the occurrence to the Geological Survey.

INTRODUCTION

Purpose and Scope of Investigation

In the fall of 1945 Mr. Walter Fisher, Alaskan placer-gold miner, reported to R. M. Chapman of the Geological Survey at Fairbanks an occurrence of pitchblende veinlets in hillside float along a tractor trail near his placer-mining property on Grant Creek in the Yukon Valley. During the winter of 1945-46 no correspondence was exchanged with Mr. Fisher on the subject of the pitchblende because of the security regulations in effect at that time.

In August 1946 a Geological Survey field party went to Grant Creek to investigate the reported pitchblende. The party consisted of F. L. Killeen and W. G. White, geologists, and R. D. Hamilton, campman. When the party arrived at Grant Creek, it was learned that Mr. Fisher had died earlier in the summer. The Fisher mine was closed, and none of the residents in the area had any information about the reported deposit.

FOR OFFICIAL USE ONLY

Consequently, much more time than had been originally planned was spent in attempting to locate it.

Location of area

Grant Creek enters the Yukon River from the north about 30 miles west of Tanana in central Alaska (see fig. 1). The area is most easily accessible from Tanana by boat. In addition to Grant Creek the following other areas were examined during this investigation: the headwaters of Toxiacran Creek, a tributary of the Toxitna River which enters the Yukon River about midway between Grant Creek and Tanana; and the headwaters of Malosiacran Creek, a tributary of the Malositna River which enters the Yukon River in the vicinity of Ruby about 100 miles west of Tanana.

GEOLOGY

The geology of the Grant Creek area has been discussed briefly by Maddren / and Eakin /. Maddren's two reports contain short accounts

/ Maddren, A. G., *Placers of the Gold Hill district (Alaska)*: U. S. Geol. Survey Bull. 379-B, pp. 234-237, 1909.

Maddren, A. G., *The Innoko gold-placer district, Alaska, with accounts of the central Kuskokwim Valley and the Ruby Creek and Gold Hill placers*: U. S. Geol. Survey Bull. 410, pp. 80-83, 1910.

/ Eakin, H. M., *A geologic reconnaissance of a part of the Rampart quadrangle, Alaska*: U. S. Geol. Survey Bull. 535, 38 pp., 1913.

Eakin, H. M., *The Yukon-Koyukuk region, Alaska*: U. S. Geol. Survey Bull. 631, 38 pp., 1916.

of the geology of the area gathered during brief investigations of the placer mining activities in the area. Eakin's two reports were based on

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

TRACE ELEMENTS INVESTIGATIONS
REPORT 42, PART I

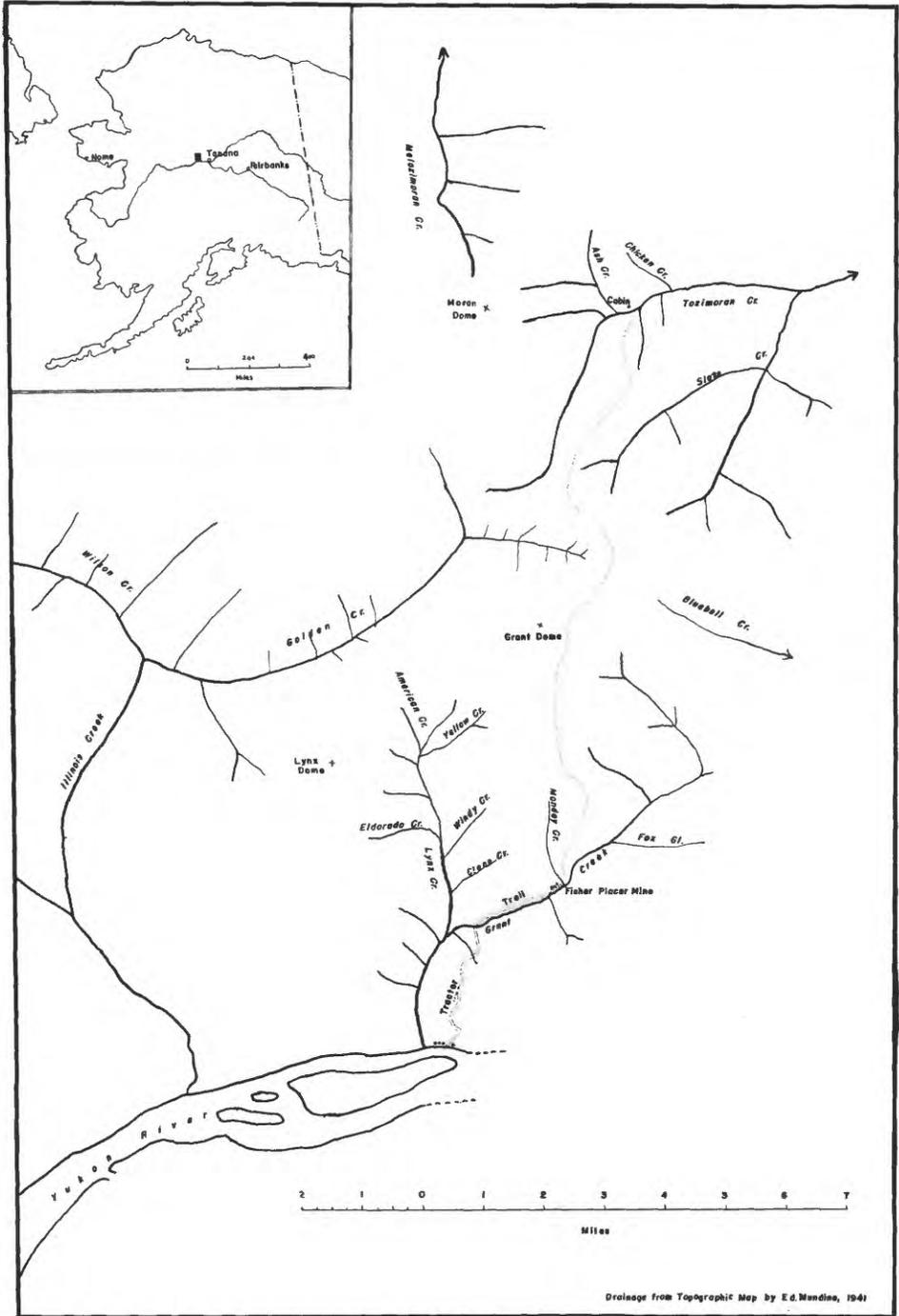


FIGURE 1 — DRAINAGE MAP OF THE GRANT CREEK AREA, YUKON REGION, ALASKA

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

geological reconnaissance investigations on a regional scale in which the Grant Creek area is included. No details, however, of the areal distribution, age, and structural relations of the individual rock types in the Grant Creek area are known.

The Grant Creek area is part of a broad zone of predominantly metamorphosed rocks that are well developed on the north side of the Yukon Valley between the Koyukuk River and the Yukon Flats. The rocks are thought to be early Paleozoic in age. A complex of intensely folded and metamorphosed schist, limestone, quartzite, and greenstone occurs within the area.

Pebbles with quartz stringers occur in the placer cuts on Grant Creek. The quartz stringers in the bedrock are probably the source of some of the placer gold. Some pebbles of a medium-grained pegmatite are also present in the gravels.

A monzonite was mapped by Eakin / at the head of Golden Creek

/ Eakin, H. M., op. cit., p. 16, 1913.

(see fig. 1) was not found. The rock at that locality consists of mica schist and greenstone. A granitic intrusive of unknown areal extent was found at the head of Malozimoran Creek.

RADIOACTIVITY

The principal objective of the investigation in the Grant Creek area was the examination of an area adjacent to a tractor trail along which the late Walter Fisher had reported finding pitchblende vein float. When the search along this trail failed to reveal any deposits of radioactive materials, the investigation was extended to other trails and

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

intervening areas. All possible materials representative of the bed-rock in the area (outcrops, talus, and fragments selected from the soil mantle) were tested, particularly at places where there were traces of mineralization. Only a few concentrates of the heavy minerals in the stream gravels were collected for testing (see table 1). The radioactivity tests in the Grant Creek area were made with a Geiger-Mueller gamma-ray counter. The background for this counter in this area averaged eight to ten counts per minute.

Locations of tests

The main tractor trail in the Grant Creek area extends from the Yukon River to Fisher's camp on upper Grant Creek, a distance of about four miles (see fig. 1). The southern portion of this trail has been shifted successively uphill as the lower route became boggy. Traces of the older abandoned parts of the trail still remain. A less distinct tractor trail runs via Lynx Creek and Windy Creek to some prospect pits. A third and more prominent trail, cleared by ax and bulldozer for a railroad survey, follows the north bank of the Yukon River eastward from the mouth of Grant Creek. It was included in the investigation because many of Fisher's more recently staked claims were in that general area. A few short old tractor trails were found on upper Grant Creek above Fisher's mine; some lead to wood lots, others to drilling sites as far upstream as the mouth of Fox Gulch. Other narrower lines have been brushed out along many of the boundaries of Fisher's claims. A prominent horse trail extends from Fisher's camp to the head of Toxisoran Creek via Grant Dome.

FOR OFFICIAL USE ONLY

All occurrences of barrock along the above trails and in much of the intervening area were examined. Pieces of float rock were also tested. The Geiger counter was operated continuously over many parts of the trails, and individual stations were selected arbitrarily for taking 5-minute readings. No radioactive material was indicated by these tests.

A short time was spent investigating the area in the vicinity of the headwaters of Tokisoran Creek, where galena veins occur on the south side of the creek, and placer cassiterite is present in the gravels. The source of the cassiterite could not be located. No other evidence of important mineralization was found, and no appreciable radioactivity was detected anywhere in the area. In table 1 are listed the data on samples from Tokisoran Creek that are available in the Alaskan Concentrate File.

An attempt was made to examine the granitic intrusive on Melosioran Creek, but a heavy snowfall at the time the party arrived at that locality restricted the examination to only a few tests with the Geiger counter. Counter-readings taken on the intrusive rose to a 20-count per minute average as compared to the 8- to 10-count per minute average on the metamorphic country rock.

CONCLUSIONS

The investigations in the Grant Creek area disclosed no float rock corresponding to Fisher's description of his pitchblende vein float material. The only material that appeared to fit his description was schist containing a few narrow streaks of limonite, but this was found on the west side of Windy Creek near its headwaters and a considerable distance from any tractor trail. It is improbable that this occurrence of limonite is the float

FOR OFFICIAL USE ONLY

referred to by Fisher. Sufficient search was made of the hillsides to conclude that the pitchblende vein or zone of veinlets as reported by Fisher does not exist.

Two fragments of a black platy mineral that were seen among the samples in Fisher's camp may have been collected from hillside float rather than from his placer workings. If this is true, Fisher's "pitchblende" is probably black hematite.

FOR OFFICIAL USE ONLY

Table 1

Data on placer concentrates from Grant and Tozimoran Creeks, Alaska.

Alaskan Concentrate File no.	Equivalent uranium content of concentrate (in percent)	Concentration Ratio	Location
<u>GRANT CREEK:</u>			
733	0.005	?	Fisher's placer out, 1942
1360	0.008	8,110:1	Fisher's placer out, 1946
1361	0.008	5,125:1	Monday Creek, at foot-bridge about 60 feet above mouth, in Grant Creek Valley
1362	0.005	1,790:1	Monday Creek, at tractor trail crossing just above edge of Grant Creek Valley
1363	0.007	11,350:1	Southern of two gulches on east side of Grant Creek, opposite Fisher's camp below Monday Creek
445	n. d.	?	Berton claim of the Tozi or Cold Hill district; probably from former prospects of Berton Amelich on Lynx Creek
<u>TOZIMORAN CREEK:</u>			
528	0.001	?	All samples from Tozimoran Creek taken mainly between its tributaries, Chicken and Ash Creeks
721	n. d.	?	
722	0.001	?	
723	0.001	?	
724	0.001	?	
725	0.001	?	
729	0.001	?	
730	n. d.	?	
731	0.001	?	
739	0.001	?	