

GEOLOGICAL
SURVEY
OF
CANADA

DEPARTMENT OF MINES
AND TECHNICAL SURVEYS

This document was produced
by scanning the original publication.

Ce document est le produit d'une
numérisation par balayage
de la publication originale.

PAPER 64-31

ANOMALOUS MOLYBDENUM IN STREAM SEDIMENTS
AND SOILS IN THE VICINITY OF
THE NICHOLAS DENYS GRANITE, BATHURST AREA,
NEW BRUNSWICK

(Report and 2 figures)

M. Tauchid



GEOLOGICAL SURVEY
OF CANADA

PAPER 64-31

ANOMALOUS MOLYBDENUM IN STREAM SEDIMENTS
AND SOILS IN THE VICINITY OF
THE NICHOLAS DENYS GRANITE,
BATHURST AREA, NEW BRUNSWICK

By

M. Tauchid

DEPARTMENT OF
MINES AND TECHNICAL SURVEYS
CANADA

ABSTRACT

Stream sediments and soils in the area of the Nicholas Denys granite show higher than normal concentrations of molybdenum and other heavy metals. These occurrences may result from mineralized zones in the contact zone of the granite and perhaps also in the granite itself.

ANOMALOUS MOLYBDENUM CONTENT OF STREAM SEDIMENTS
AND SOILS IN THE VICINITY OF
THE NICHOLAS DENYS GRANITE, BATHURST AREA,
NEW BRUNSWICK

This paper draws attention to the anomalous occurrence of molybdenum and other heavy metals in stream sediments and soils in the general area of the Nicholas Denys granite. The molybdenum content in particular suggests that this area should be prospected carefully for molybdenum as well as for base metals.

GENERAL GEOLOGY

The general geology of the area has been described by Skinner (1953), Smith (1957) and by Boyle and Davies (1964). The area is underlain by a variety of argillites, calcareous argillites, and shales that are transformed to skarn-like rocks in the vicinity of the intrusive Nicholas Denys granite. The sedimentary rocks are steeply dipping and are intersected in places by stocks and dykes of quartz-feldspar porphyries that are presumably related to the granite. Numerous faults and fractures cut the sediments and porphyries and may also intersect the Nicholas Denys granite. Several lead-zinc-copper-silver-bearing veins occur in the faults, and there is a deposit of magnetite containing some copper in the area. A garnetized zone containing molybdenite and scheelite was intersected by a diamond-drill hole recently put down by a company working in the area.

FIELD AND LABORATORY WORK

The stream sediments in the Millstream River were collected by A. Y. Smith and M. Tauchid and analyzed for copper, lead, and zinc by G. Mihailov and for molybdenum by Tauchid. The soils were collected and analyzed for molybdenum by Tauchid.

The hot extraction method as described by Gilbert (1964) was used in the determination of the heavy metals (Cu, Pb, Zn). The molybdenum was determined by the thiocyanate method after fusing the samples with potassium bisulphate.

RESULTS

The analytical results are shown on Figures 1 and 2.

The normal background in the area is considered to be: Cu—15 ppm; Pb—25 ppm; Zn—170 ppm; and Mo—1.5 ppm.

Four areas are of particular interest. These are circled on Figure 1 and numbered 1 to 4. Brief comments on each of these areas follow:

No. 1. All metal concentrations are higher than normal, particularly molybdenum, zinc, and lead. One sample also contained up to 12 ppm tungsten.

No. 2. Higher than normal copper content.

No. 3. Higher than normal molybdenum content. Recent drilling in the area proved the existence of a garnet zone with molybdenite and scheelite.

No. 4. Higher than normal molybdenum and lead contents.

Figure 2 shows that the molybdenum content of the soils is higher in the vicinity of the Nicholas Denys granite and along the fault zones to the south. The higher values in the area northeast of the granite body may be due to glaciation.

CONCLUSIONS

The results indicate the presence of higher than average amounts of molybdenum in the stream sediments and soil in the vicinity of the Nicholas Denys granite. There are also a number of relatively high heavy-metal concentrations that merit consideration.

The molybdenum results suggest the presence of mineralized zones carrying molybdenum and perhaps tungsten in the contact zone of the granite as well as in the granite itself. Detailed soil analyses on a closely spaced grid should be carried out to ascertain the best areas for more detailed prospecting for molybdenum, tungsten, and base-metal mineralization.

REFERENCES

- Boyle, R.W., and Davies, J.L.
1964: Geology of the Austin Brook and Brunswick No. 6 sulphide deposits, Gloucester County, New Brunswick; Geol. Surv. Can., Paper 63-24.

Skinner, R.

1953: Bathurst, Gloucester and Restigouche Counties, New Brunswick; Geol. Surv. Can., Paper 53-29.

Smith, C.H.

1957: Bathurst-Newcastle area, New Brunswick; Geol. Surv. Can., Map 1-1957.

Gilbert, M.A.

1959: Field and laboratory methods used by the Geological Survey of Canada in geochemical surveys, No. 1, Laboratory methods for determining copper, zinc, and lead; Geol. Surv. Can., Paper 59-3 (Reprinted 1964).

66°00'

65°50'

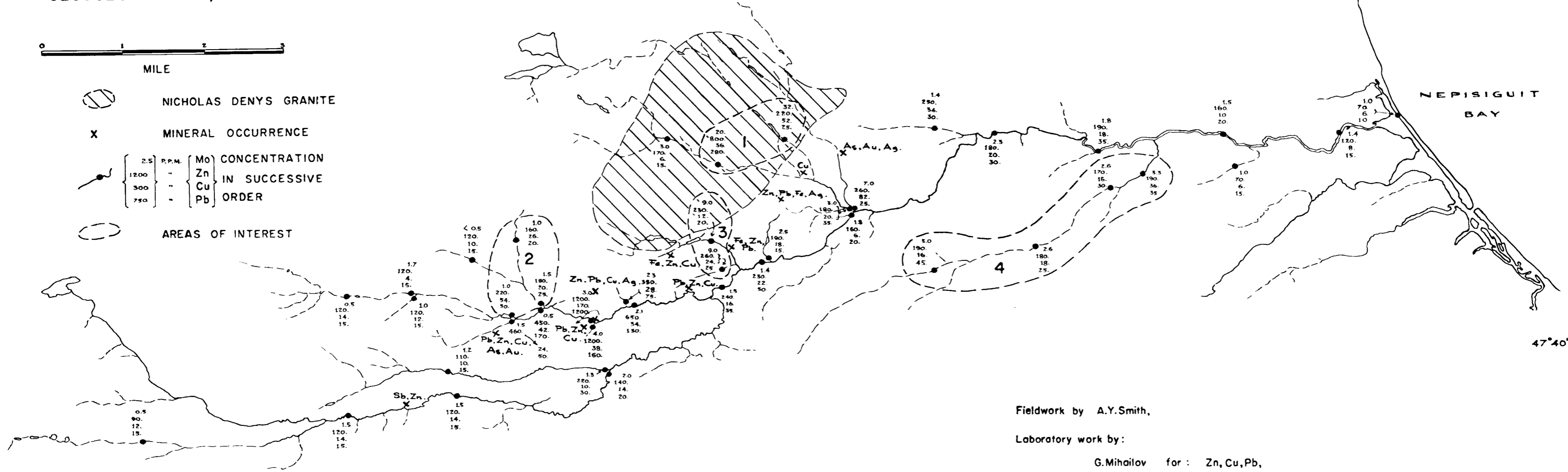
65°40'

FIGURE 1
 STREAM SEDIMENT SURVEY
 OF
 MILLSTREAM RIVER SYSTEM
 GLOUCESTER CO., N.B.



- NICHOLAS DENYS GRANITE
- MINERAL OCCURRENCE
- CONCENTRATION IN SUCCESSIVE ORDER

2.5	P.P.M.	Mo
1200	"	Zn
300	"	Cu
750	"	Pb
- AREAS OF INTEREST



Fieldwork by A.Y. Smith,

Laboratory work by:

- G. Mihailov for : Zn, Cu, Pb,
- M. Tauchid for : Mo,

47°40'

M.T. 1964.

ROGER DUHAMEL, F. R. S. C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1964

Price 35 cents

Cat. No. M44-64 / 31