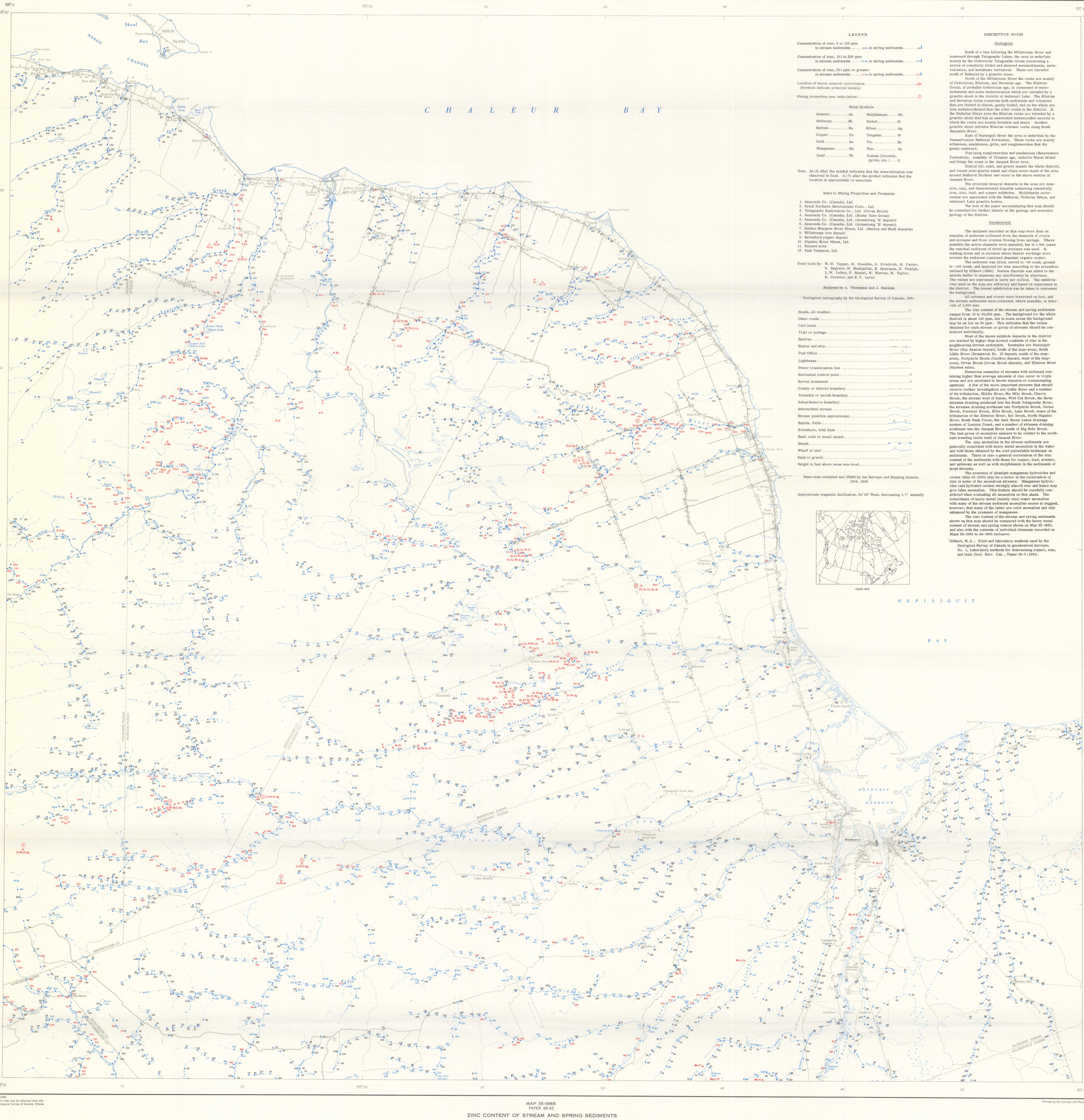
GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

PRELIMINARY SERIES



LEGEND

Concentration of zinc, 0 to 150 ppm in stream sediments...... 30 •, in spring sediments........ 30

Concentration of zinc, 151 to 250 ppm in stream sediments...... 200 •, in spring sediments....... 200

Concentration of zinc, 251 ppm or greater in stream sediments...... 300 •, in spring sediments....... 300

Location of known mineral occurrences .... × Zn
(Symbols indicate principal metals)

Mining properties (see index below) .... ①

Metal Symbols

Arsenic	As	Molybdenum	Mo
Antimony	Sb	Nickel	Ni
Barium	Ba	Silver	Ag
Copper	Cu	Tungsten	W
Gold	Au	Tin	Sn
Manganese	Mn	Zinc	Zn
Lead	Pb	Gossan (limonite, pyrite, etc.)	G

Note: An (f) after the symbol indicates that the mineralization was observed in float. A (?) after the symbol indicates that the location is approximate or uncertain

Index to Mining Properties and Prospects

1. Anaconda Co. (Canada), Ltd.
2. Great Northern Development Corp., Ltd.
3. Tetagouche Exploration Co., Ltd. (Orvan Brook)
4. Anaconda Co. (Canada), Ltd. (Rocky Turn Group)
5. Anaconda Co. (Canada), Ltd. (Armstrong 'A' deposit)
6. Anaconda Co. (Canada), Ltd. (Armstrong 'B' deposit)
7. Quebec Sturgeon River Mines, Ltd. (Hachey and Shaft deposits)
8. Millstream iron deposit
9. Beresford copper deposit
10. Nigadoo River Mines, Ltd.
11. Keymet mine
12. East Ventures, Ltd.

Field work by: W. M. Tupper, M. Ziauddin, G. Friedrich, M. Carter, K. Bygrave, M. Shafiqullah, R. Bourassa, D. Picklyk, L. W. LeRoy, P. Martel, W. Warren, W. Taylor, R. Cormier, and E. T. Lever

Analyses by A. Thompson and J. Huculak

Geological cartography by the Geological Survey of Canada, 1965

Roads, all weather
Other roads
Cart track
Trail or portage
Railway
Station and stop
Post Office
Lighthouse
Power transmission line
Horizontal control point
Survey monument
County or district boundary
Township or parish boundary
Indian Reserve boundary
Intermittent stream
Stream (position approximate)
Rapids, Falls
Foreshore, tidal flats
Reef, rock or small island
Marsh
Wharf or pier
Sand or gravel
Height in feet above mean sea-level 139

Base-map compiled and drawn by the Surveys and Mapping Branch, 1954, 1956

Approximate magnetic declination, 24° 03' West, decreasing 1.7' annually

DESCRIPTIVE NOTES

Geological

South of a line following the Millstream River and westward through Tetagouche Lakes, the area is underlain mainly by the Ordovician Tetagouche Group comprising a series of complexly folded and sheared metasediments, metavolcanics, and metabasic intrusives. These are intruded south of Bathurst by a granitic mass.

North of the Millstream River the rocks are mainly of Ordovician, Silurian, and Devonian age. The Elmtree Group, of probable Ordovician age, is composed of metasediments and some metavolcanics which are intruded by a granitic stock in the vicinity of Antinouri Lake. The Silurian and Devonian rocks comprise both sediments and volcanics that are faulted in places, gently folded, and on the whole are less metamorphosed than the older rocks in the district. In the Nicholas Dénys area the Silurian rocks are intruded by a granitic stock that has an associated metamorphic aureole in which the rocks are mainly hornfels and skarn. Another granitic stock intrudes Silurian volcanic rocks along South Benjamin River.

East of Nepisiguit River the area is underlain by the Pennsylvanian Bathurst Formation. These rocks are mainly siltstones, sandstones, grits, and conglomerates that dip gently eastward.

Flat-lying conglomerates and sandstones (Bonaventure Formation), possibly of Triassic age, underlie Heron Island and fringe the coast in the Jacquet River area.

Glacial till, sand, and gravel mantle the whole district, and recent post-glacial sands and clays cover much of the area around Bathurst Harbour and occur in the shore section at Jacquet River.

The principal mineral deposits in the area are massive, vein, and disseminated deposits containing essentially iron, zinc, lead, and copper sulphides. Molybdenite occurrences are associated with the Bathurst, Nicholas Dénys, and Antinouri Lake granitic bodies.

The text of the paper accompanying this map should be consulted for further details on the geology and economic geology of the district.

Geochemical

The analyses recorded on this map were done on samples of sediment collected from the channels of rivers and streams and from rivulets flowing from springs. Where possible the active channels were sampled, but in a few cases the residual sediment of dried-up streams was used. In muskeg areas and in streams where beaver workings were present the sediment contained abundant organic matter.

The sediment was dried, sieved to -80 mesh, ground to -150 mesh, and analyzed for zinc according to the procedure outlined by Gilbert (1964)[1]. Sodium fluoride was added to the acetate buffer to suppress any interference by aluminum. The values are expressed in parts per million. The subdivisions used on the map are arbitrary and based on experience in the district. The lowest subdivision can be taken to represent the background.

All streams and rivers were traversed on foot, and the stream sediments were collected, where possible, at intervals of 1,500 feet.

The zinc content of the stream and spring sediments ranges from 10 to 34,000 ppm. The background for the whole district is about 150 ppm, but in some areas the background may be as low as 50 ppm. This indicates that the values obtained for each stream or group of streams should be considered individually.

Most of the known sulphide deposits in the district are marked by higher than normal contents of zinc in the neighbouring stream sediments. Examples are Nepisiguit River (Key Anacon deposit, south of the map-area), South Little River (Brunswick No. 12 deposit, south of the map-area), Fortymile Brook (Cariboo deposit, west of the map-area), Orvan Brook (Orvan Brook deposit), and Elmtree River (Keymet mine).

Numerous examples of streams with sediment containing higher than average amounts of zinc occur in virgin areas and are unrelated to known deposits or contaminating agencies. A few of the more important streams that should receive further investigation are Little River and a number of its tributaries, Middle River, Six Mile Brook, Cherry Brook, the stream west of Kanes, Wild Cat Brook, the three streams draining southeast into the South Tetagouche River, the streams draining northeast into Fortymile Brook, Guitar Brook, Fournier Brook, Ellis Brook, Lake Brook, some of the tributaries of the Elmtree River, Eel Brook, North Nigadoo River, South Nash Creek, the Jack Burns Lakes drainage system of Louison Creek, and a number of streams draining southeast into the Jacquet River south of Big Hole Brook. The last group of anomalies appears to be related to the northeast trending faults west of Jacquet River.

The zinc anomalies in the stream sediments are generally coincident with heavy metal anomalies in the water and with those obtained by the cold extractable technique on sediments. There is also a general correlation of the zinc content of the sediments with those for copper, lead, arsenic, and antimony as well as with molybdenum in the sediments of most streams.

The presence of abundant manganese hydroxides and oxides (Map 44-1965) may be a factor in the localization of zinc in some of the anomalous streams. Manganese hydroxides (and hydrated oxides) strongly adsorb zinc and hence may give false anomalies. This feature should be carefully considered when evaluating all anomalies on this sheet. The coincidence of heavy metal (mainly zinc) water anomalies with many of the stream sediment anomalies seems to suggest, however, that many of the latter are valid anomalies and only enhanced by the presence of manganese.

The zinc content of the stream and spring sediments shown on this map should be compared with the heavy metal content of stream and spring waters shown on Map 32-1965, and also with the contents of individual elements recorded on Maps 34-1965 to 44-1965 inclusive.

[1] Gilbert, M. A.: 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 (1964).

Published, 1966
Copies of this map may be obtained from the Director, Geological Survey of Canada, Ottawa

MAP 35-1965
PAPER 65-42

ZINC CONTENT OF STREAM AND SPRING SEDIMENTS
BATHURST - JACQUET RIVER DISTRICT
NEW BRUNSWICK

Scale 1:63,360
1 inch to 1 mile

Printed by the Surveys and Mapping Branch

21 O/16	21 P/13	21 P/14
21 O/9	21 P/12	21 P/11
21 O/8	21 P/5	21 P/6

N. T. S. REFERENCE
BATHURST - JACQUET RIVER DISTRICT
NEW BRUNSWICK