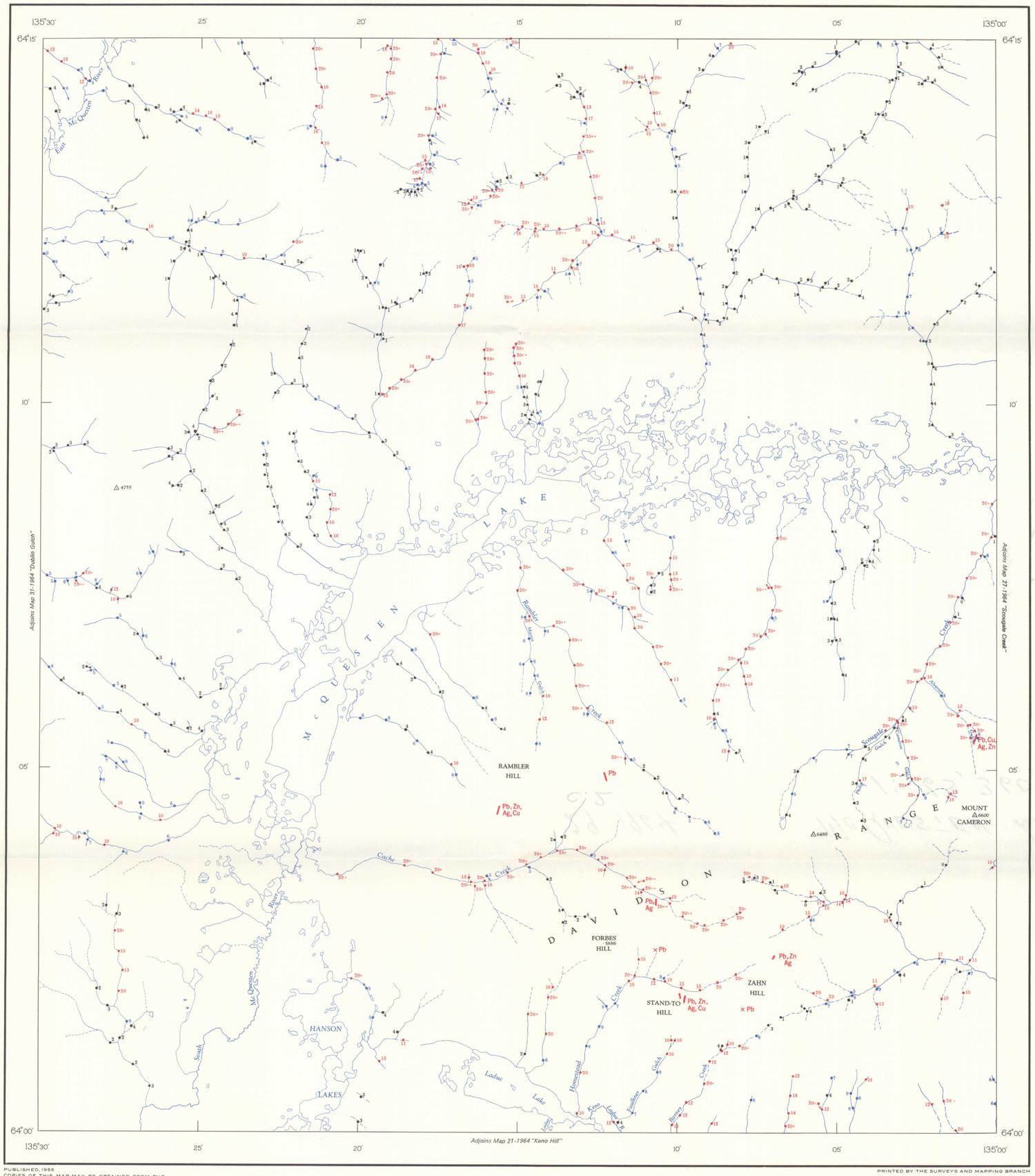
GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

PRELIMINARY SERIES

106 D/3



LEGEND

Concentration of heavy metal, 10 or greater ppm
in stream sediments . . 15●, in spring sediments . . . . . 15●

Concentration of heavy metal, 5 to 9 ppm
in stream sediments . . 7●, in spring sediments . . . . . 7●

Concentration of heavy metal, 0 to 4 ppm
in stream sediments . . 4●, in spring sediments . . . . . 4●

Location of known mineral veins . . . . . ▬ ▬

Mineral occurrences . . . . . Pb ×

Mineral Symbols

Copper . . . . . Cu	Silver . . . . . Ag
Lead . . . . . Pb	Zinc . . . . . Zn

Field work by C. F. Gleeson, W. M. Tupper, A. Suparman, K. Domai, M. Shafiqullah, J. A. Colwell, J. R. Deighton, C. H. Yurchak, J. K. Worth, H. R. James, A. G. Troup, G. Wind, L. Hogg, and F. R. Campbell

Geological cartography by the Geological Survey of Canada, 1965

Intermittent lake and stream . . . . . ⊂⊃

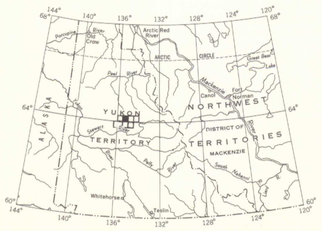
Marsh . . . . . ●●●

Horizontal control point . . . . . △

Elevation in feet above mean sea-level 4755

Base-map produced by the Army Survey Establishment, R. C. E. 1951

Approximate magnetic declination, 33° 52′ East, decreasing 4.3′ annually



DESCRIPTIVE NOTES

Geological

The McQuesten Lake area is underlain by a series of metamorphosed sedimentary rocks, mainly quartzites, phyllites, chlorite, sericite, and graphite schists, with minor limestone and slate. Basic igneous sills and lenses now altered to greenstone are interlayered with the metasedimentary rocks. Granitic rocks outcrop in the southwest corner of the area, and two small granitic bodies occur on the south side of Davidson Range (Green, 1958). A few dykes and sills of quartz-feldspar porphyry are present in the area.

The region has undergone several stages of glaciation, and thick glacial deposits occupy the major valleys and hill slopes below an elevation of 3,000 feet. Permafrost is present throughout the area.

Several lead-zinc-silver deposits are present in Davidson Range. The occurrences in the vicinity of Rambler Hill, Stand-to Hill, Zahn Hill, and Mount Cameron have been described by Cockfield (1922). The deposits occur in northerly striking vein faults that cut quartzites, phyllites, and greenstone. North of Mount Cameron a mineralized fault cuts a band of limestone. The vein fillings contain galena, siderite, sphalerite, and minor chalcopyrite. These deposits have been oxidized with the formation of manganese oxides, limonite, cerussite, anglesite, and malachite.

Further details on the geology and mineralization of the area can be obtained from reports by Cockfield (1922), Green (1958), Green and McTaggart (1960), Green and Roddick (1962), Aho (1964), Poole (1965), and Boyle (1965).

Geochemical

The data on this map are based on samples of sediment collected from the channels of the streams and on samples of the sediments and precipitates in the vicinity of springs. Where possible the active channel was sampled. However, as the field work progressed it was found that moss on the creek banks below the water line had trapped considerable amounts of fine sediment. This kind of sample proved to be adequate, and in many instances this was the type of stream sediment sample analyzed. The wet sediment was analyzed at the sample site for cold citrate-soluble heavy metals (principally zinc, copper, and lead) using the method described by Smith (1964).

The values are expressed as total heavy metal in parts per million. The quantitative laboratory work done to date indicates that most of the heavy metal detected by the field test is zinc.

Helicopters were used to set-out traverse teams at or near the heads of the creeks; traverses down the streams were done on foot. An attempt was made to maintain a sample interval of 1,500 feet along all creeks.

The known mineral deposits produce heavy metal anomalies in the stream sediments. The anomalous metal dispersion trains in this area vary in length from less than ½ mile to over 6 miles. In most cases the sediment and water anomalies (see Map 28-1964) are coincident. However, there are exceptions especially in some of the creeks draining Davidson Range. The reason for this lack of agreement is not known, but may be related to the presence or absence of permafrost and to the pH and and Eh of the environment.

Some of the anomalies are related in part to metal-rich springs. This is particularly true of the Davidson Range and the area north of the north end of McQuesten Lake.

Most of the anomalies occur in creeks draining areas underlain by quartzites, phyllites, and greenstone. The creek cutting the granitic stock in the southwest corner of the area is also anomalous. Further investigations are warranted in all anomalous areas.

The heavy metal content of stream and spring sediments and precipitates shown on this map should be compared with the heavy metal content of the stream and spring waters shown on Map 28-1964.

Aho, A. E.: Mineral potential of the Mayo district; Western Miner, vol. 37, No. 10, pp. 80-88 (1964).

Boyle, R. W.: Geology, geochemistry, and origin of the lead-zinc-silver deposits of the Keno Hill - Galena Hill area, Yukon Territory; Geol. Surv. Can., Bull. 111 (1965).

Cockfield, W. E.: Silver-lead deposits of Davidson Mountains, Mayo district, Yukon Territory; Geol. Surv. Can., Summ. Rept. 1921, pt. A, pp. 1A - 6A (1922).

Green, L. H.: McQuesten Lake and Scougale Creek map-areas, Yukon Territory; Geol. Surv. Can., Paper 58-4 (1958).

Green, L. H., and McTaggart, K. C.: Structural studies in the Mayo district, Yukon Territory; Proc. Geol. Assoc. Canada, vol. 12, pp. 119-134 (1960).

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Poole, W. H.: Reports of activities: field, 1964; Geol. Surv. Can., Paper 65-1 (1965).

Smith, A. Y.: Cold extractable "heavy metal" in soil and alluvium; Geol. Surv. Can., Paper 63-49 (1964).

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MAP 29-1964

HEAVY METAL CONTENT OF STREAM AND SPRING SEDIMENTS

McQUESTEN LAKE

YUKON TERRITORY

Scale 1:63,360
1 inch to 1 mile

Miles 1 0 1 2 3 Miles

Kilometres 1 0 1 2 3 4 5 Kilometres

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McQUESTEN LAKE
YUKON TERRITORY
MAP 29-1964