

**LEGEND**

Concentration of heavy metal, 0.001 or greater ppm  
in stream waters . . . . . 0.001+

Concentration of heavy metal, 0.000 ppm  
in stream waters . . . . . 0.000

Location of known veins . . . . . - - - - -

Mineral occurrence . . . . . Au (P)

Mineral deposit . . . . . 3

**Mineral Symbol**

Gold (placer) . . . . . Au (P)

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Geological cartography by the Geological Survey of Canada, 1965

**INDEX TO MINES AND PROSPECTS**

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| 1. Elsa                                | 21. Onak                    | 42. No. 6                |
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| 3. Coral and Wigwam                    | 23. Sadie-Friendship        | 44. Comstock             |
| 4. Arctic and Mastiff                  | 24. Ladue                   | 45. No. 9                |
| 5. Ruby                                | 25. Bellekeno               | 46. No. 1                |
| 6. No Cash                             | 26. Mount Keno (Hogan vein) | 47. Gambler              |
| 7. Betty                               | 27. Ankeno                  | 48. Main fault and Nabob |
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Roads, all weather . . . . . ————

Other roads . . . . . - - - - -

Intermittent lake and stream . . . . . ~~~~~

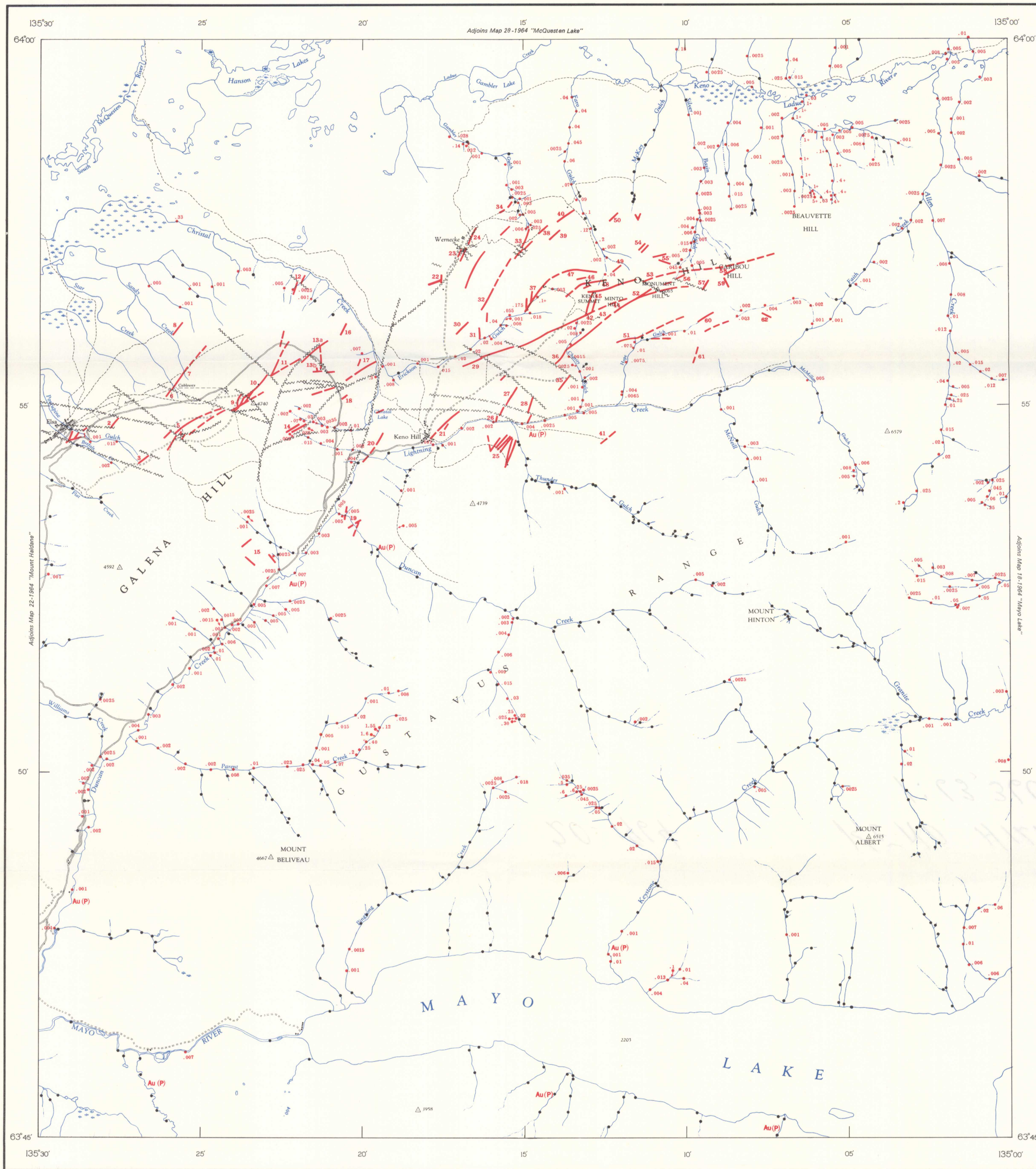
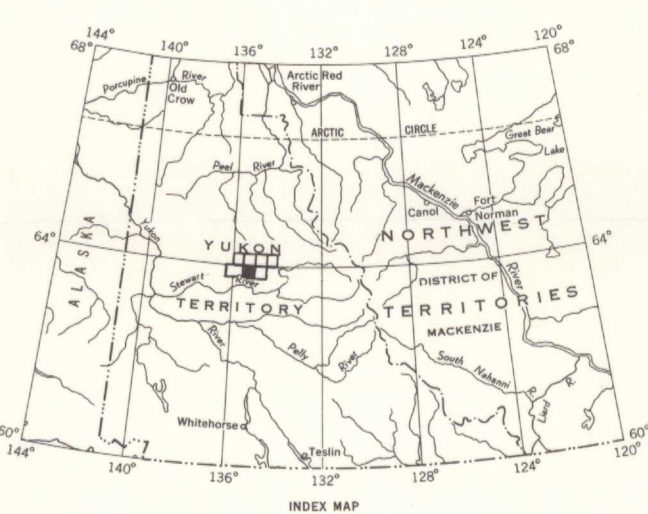
Marsh . . . . . [Symbol]

Horizontal control point . . . . . Δ

Elevation in feet above mean sea-level . . . . . 4274

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

Approximate magnetic declination, 33° 42' East, decreasing 4.2' annually



**DESCRIPTIVE NOTES**

**Geological**

The Keno Hill area is underlain by a series of metamorphosed sedimentary rocks, mainly quartzites, phyllites, sericite, and graphite schists, and minor limestone. Basic igneous sills and lenses now altered to greenstones are interlayered with these rocks. Quartz-feldspar porphyry dykes and sills and a few lamprophyre dykes cut the metametamorphic rocks in places.

The area 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.

Most of the ore deposits occur along northeasterly striking vein faults in thick bedded quartzite and occasionally in greenstone. Early vein fillings contain mainly pyrite and/or arsenopyrite with or without silver and lead minerals. Later mineralization resulted in the deposition of siderite, sphalerite, galena, and argenterous tetrahedrite. The near surface parts of the veins have been deeply oxidized, with the formation of limonite, manganese oxides, cerussite, anglesite, malachite, azurite, scorodite, and numerous other supergene lead, zinc, cadmium, and silver minerals.

Further details on the geology and mineralization of the area can be obtained from reports by Bostock (1947), McTaggart (1960), Kindie (1962), Aho (1964), Boyle (1965), and Poole (1965).

**Geochemical**

The data on the map are based on samples of stream and spring waters that were tested at the sample site using the method described by Boyle, Illsley, and Green (1955).

The values are expressed as total heavy metal (zinc, copper, and lead) in parts per million. Most of the heavy metal in the water is zinc. The pH of the water varies from 3.7 to 8.2, but most of the values are between 5 and 6. The temperature of the water varies from 0° to 10° C.

The creeks not accessible by roads were reached by helicopter. An attempt was made to maintain a sample interval of 1,500 feet along the creeks.

A detailed hydrogeochemical study was done in part of this area by Boyle, Illsley, and Green (1955); most of the anomalies found by the earlier work were also detected by this survey. The anomalies on Erickson, Charity, and Hope Gulches are more extensive than those found by the previous survey.

Most of the known lode occurrences give rise to water anomalies. The anomalies in Gambler, Faro, Silver Basin, Erickson, Charity, Hope, and Faith Gulches, and in the creeks draining Galena Hill are related in part to known vein systems. The high values in Parent, Duncan, Pingpong, and Keystone Creeks, and in the first gulch east of the mouth of Keystone Creek are probably related to fault zones in pyriticiferous graphitic schists and phyllites.

The anomalies in the creeks draining south into the Keno-Ladue River, those on the northern slope of Beauvette Hill, those in Allen, McNeill, and McMillan Creeks, those in the creeks south and east of the head of Allen Creek, and those in the stream running into Mayo Lake in the southeast corner of the area, drain areas underlain by quartzites and/or greenstone. These anomalous creeks should be investigated further.

Metal-bearing springs give rise to anomalies on the following creeks: Parent, Duncan, and Allen, those draining the northern slope of Beauvette Hill, the small tributary on the left limit of the lower part of Gambler Gulch, and the first gulch east of the mouth of Keystone Creek. Some of these springs may be related to mineralized fractures, veins, or faults.

The heavy metal content of the water shown on this map should be compared with the heavy metal content of stream and spring sediments, and precipitates shown on Map 21-1964.

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

Bostock, H. S.: Mayo, Yukon Territory; Geol. Surv. Can., Map 890A (1947).

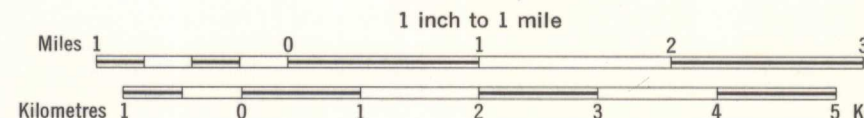
Boyle, R. W., Illsley, C. T., and Green, R. N.: Geochemical investigation of the heavy metal content of stream and spring waters in the Keno Hill - Galena Hill area, Yukon Territory; Geol. Surv. Can., Bull. 32 (1955).

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).

Kindie, E. D.: Keno Hill, Yukon Territory; Geol. Surv. Can., Map 1105A (1962).

McTaggart, K. C.: The geology of Keno and Galena Hills, Yukon Territory; Geol. Surv. Can., Bull. 58 (1960).

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

MAP 20-1964  
 HEAVY METAL CONTENT OF STREAM AND SPRING WATERS  
**KENO HILL**  
 YUKON TERRITORY  
 Scale 1:63,360  
 1 inch to 1 mile  


This map has been produced from a scanned version of the original map. Reproduction par numérisation d'une carte sur papier.