

LEGEND

**CENOZOIC**

**QUATERNARY**

**PLEISTOCENE AND RECENT**

7a-7f Surficial deposits: 7a, mainly till and talus; 7b, glacial outwash; 7c, kame moraine deposits; 7d, alpine moraine deposits; 7e, stratified silts; 7f, fluvial sand and gravel

**MESOZOIC ?**

6 Quartz porphyry, granite porphyry, rhyolite

**PALAEZOIC ?**

5 Diorite, gabbro, greenstone

**PRECAMBRIAN**

4 Quartz-mica schist, quartzite, chloritic schist, limestone

3 Quartz-mica schist, graphitic schist, quartzite, limestone

2 Quartzite, graphitic schist, quartz-mica-chlorite schist

1 Quartz-mica schist, graphitic schist, thin bedded quartzite

Kame terrace

Esker

Bedding (horizontal, inclined, vertical)

Fault (defined, assumed)

Glacial striae

Limestone

Shaft

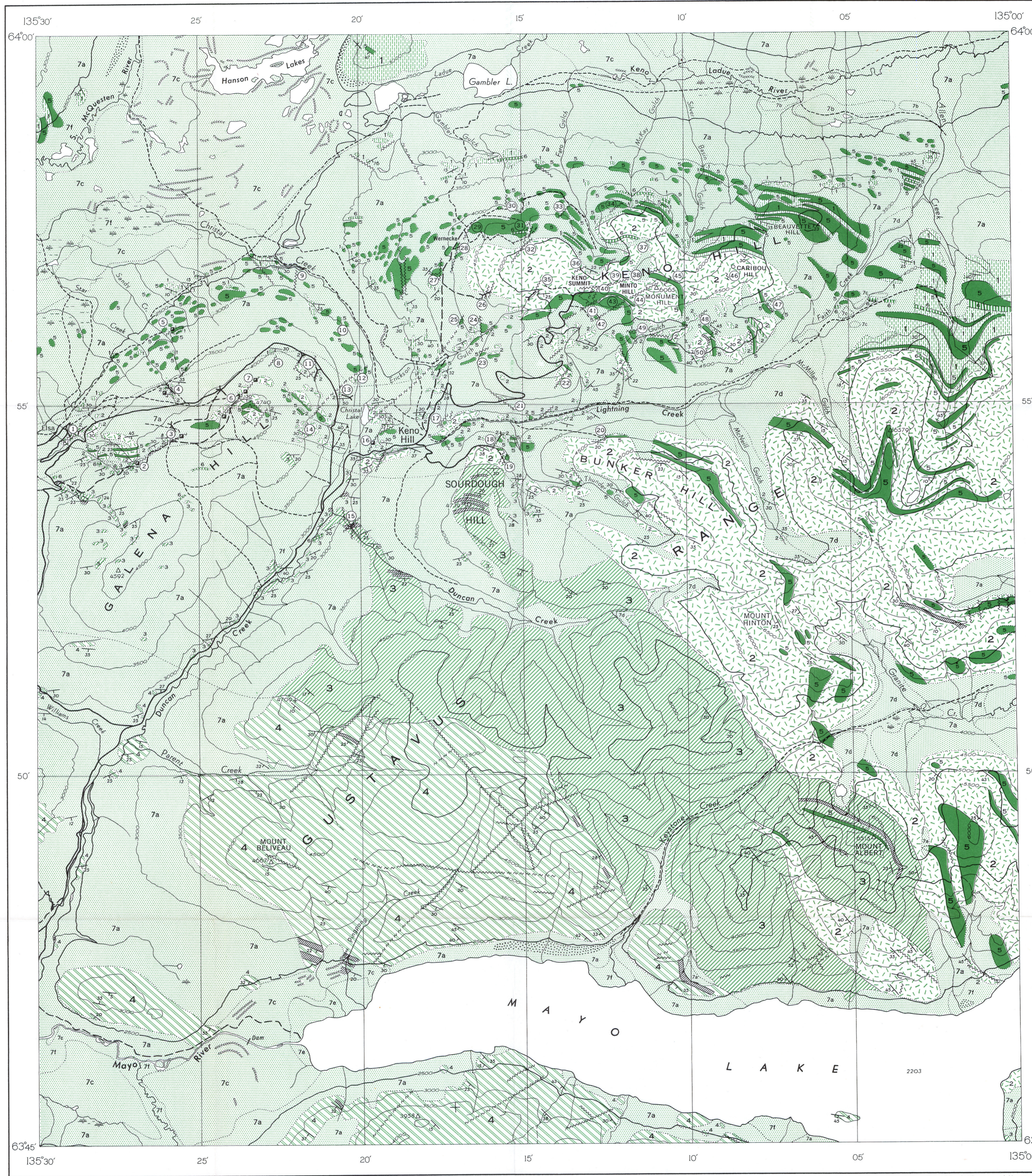
Adit

Mine or prospect

INDEX TO MINES AND PROSPECTS  
SILVER-LEAD-ZINC-CADMIUM DEPOSITS

1. Elsa (United Keno Hill Mines Limited)
2. Coral and Wigwag (United Keno Hill Mines Limited)
3. Arctic and Mastiff (United Keno Hill Mines Limited)
4. No Cash (United Keno Hill Mines Limited)
5. Cream
6. Hector (United Keno Hill Mines Limited)
7. Calumet (United Keno Hill Mines Limited)
8. Dragon
9. Tyee-Rocket (Yukeno Mines Limited)
10. Bluebird
11. Rio-Keno (MacKeno Mines Limited)
12. Tin Can
13. Rico
14. Eagle
15. Overtime (United Keno Hill Mines Limited)
16. Flame and Moth (United Keno Hill Mines Limited)
17. Onek (United Keno Hill Mines Limited)
18. Whipsaw-Tundra (Belikeno Mines Limited)
19. Ram (Mayo Mines Limited)
20. Homestake (Lustre Yukon Mines Limited)
21. Thunderbird-Greta (Mount Keno Mines Limited and Amco Exploration Inc.)
22. Vanguard
23. Dorothy (Ankeno Mines Limited)
24. Croesus No. 1
25. Kijo
26. Black Cap (Brewis Red Lake Mines Limited)
27. Blue Rock (Kendike-Keno Mines Limited)
28. Spide-Friendship (United Keno Hill Mines Limited)
29. Ladue (United Keno Hill Mines Limited)
30. Lake
31. Highlander-Bunny
32. Lucky Queen
33. Stone (Jersey Yukon Mines Limited)
34. Spot
35. Shamrock (United Keno Hill Mines Limited)
36. Gambler
37. Silver Basin
38. Ladue Fraction
39. Nabob (Comstock Keno Mines Limited)
40. Roulette (No.9) (United Keno Hill Mines Limited)
41. Keno (No.6) (United Keno Hill Mines Limited)
42. Porcupine (United Keno Hill Mines Limited)
43. Minto (Comstock Keno Mines Limited)
44. Goldhill No. 2
45. Gold Queen
46. Caribou
47. Faith
48. Divide
49. Helen Fraction
50. Devon

Geology by E.D. Kindle 1952-54



PUBLISHED, 1955

Printed by the Surveys and Mapping Branch

PRELIMINARY MAP 55-12  
**KENO HILL**  
YUKON TERRITORY

Scale: One Inch to One Mile =  $\frac{1}{63,360}$   
Miles



Approximate magnetic declination, 34°27' East

LEGEND

- Main roads
- Other roads
- Trail
- Stream (position approximate)
- Marsh
- Triangulation station
- Height in feet above mean sea-level

Cartography by the Geological Cartography Unit, 1955

DESCRIPTIVE NOTES

Elsa and Keno Hill mining camps are in Mayo mining district in central Yukon about 220 miles north of Whitehorse. The area is reached from Whitehorse by a gravelled highway with three river ferries.

Keno Hill map-area lies in the Stewart Plateau and is characterized by individual mountains and small ranges separated by broad deep valleys. The Gustavus Range occupies the central part with the deep valley of Mayo Lake and Mayo River on the south.

All parts of the area except the highest peaks were glaciated during the glacial epoch and even the peaks may have been covered in an early period of greater ice development. Well-developed kame terraces up to elevations of 3,900 feet along the south slopes of Mount Albert suggest that the ice level remained below 4,000 feet above sea-level in the main valleys throughout the last major advance of the Pleistocene epoch. In the main valleys the scouring action of the westerly moving ice destroyed gold placer deposits in its path but in protected and constricted valleys, particularly those trending about at right angles to the course of the main valleys, gold placer gravels were overrun and covered by glacial deposits.

Quartzite, micaceous, chloritic, and graphitic schists, and crystalline limestone, all belonging to the Yukon group, form the bulk of the rocks in the area. These are intruded by sills of diorite and greenstone and by dykes of quartz porphyry and rhyolite. The Yukon group forms a continuous series of strata dipping at from 10 to 35 degrees south, with the youngest beds at the west end of Mayo Lake. The schists and quartzite form the southerly limb of an anticline whose axial plane trends easterly along McQueen River Valley south of Hanson Lake and then swings south-easterly at Keno Hill toward Mayo Lake. Small drag-folds with arms that measure only a few inches across and a few are from 10 to 15 feet across. The axial planes of the drag-folds lie parallel with the strike and dip of the enclosing quartzites and schists and roughly parallel with the axial plane of the main anticline, and indicate the latter to be overturned to the north and northeast.

The Yukon group rocks are divided into four map-units, (1, 2, 3, and 4) on a basis of their lithology. These divisions were originally recognized and used by C. H. Stockwell (1926) and H. S. Bostock (1947). The rocks of map-unit 1 are the oldest. They consist of thin-bedded, brown weathering, micaceous quartzite, black graphitic schist, quartz-mica schist, and greenish quartz-mica-chlorite schists.

Map-unit 2, generally referred to as the quartzite formation, is composed dominantly of thick-bedded grey and white quartzite beds. The quartzite is intercalated with bands of graphitic schist and with quartz-mica schist and quartz-mica-chlorite schist. Much of the quartzite is micaceous, particularly towards the base of the section. The quartzite formation thins in a westerly direction, probably as a result of several of the lowest quartzite beds changing gradually to schist.

Map-unit 3 consists largely of grey and yellow quartz-mica schists, greenish chloritic schists, and black graphitic schists with limestone. From bottom to top are 6, 10, 30, 8, and 20 feet thick, respectively.

Map-unit 4 is composed dominantly of brownish weathering quartz-mica schist and light-colored schistose quartzite with some beds of massive white quartzite. Some of the quartzite is coarse, formed of grit to pea sized quartz grains. The contact of 4 and 3 is marked by a change from quartzite to graphitic schist. Lenses of crystalline limestone up to 25 feet thick are present locally and one bed occurs very persistently at a horizon a few hundred feet above its base.

Diorite and greenstone intrude only map-units 1 and 2. Thick bodies of these intrusions display coarsely crystalline textures, whereas thin bodies are finely crystalline and are generally sheared and altered in part at least to greenstone.

Dykes and sills of rhyolite, quartz porphyry, and granite porphyry that cut the diorite and older rocks are probably related to the granites that outcrop north of the east end of Mayo Lake, northwest of Hanson Lake, and at Dublin Gulch. A dyke of biotite lamprophyre at the Yukeno mine may also be related. These are all fresh, massive looking rocks and their unaltered appearance suggests a Mesozoic or younger age.

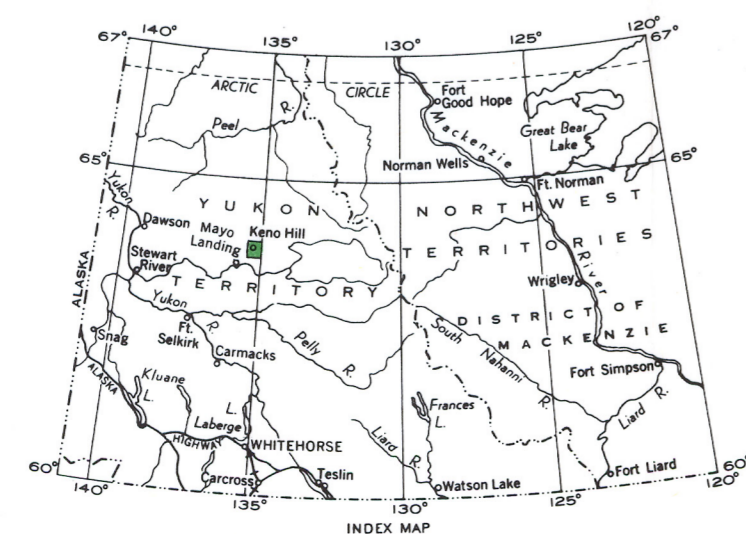
Most of the ore deposits occur along northeasterly striking fault fissures that dip steeply southeast. The most productive and persistent veins are in the quartzite formation and many of them lie near the contacts of the quartzite with overlying or underlying bands of graphitic schist. Some important orebodies have been found where greenstone is faulted against schist, and a few vein deposits occur where both hanging- and foot-wall are schist. Many of the veins are offset by cross-faults and in some cases ore has been deposited along the cross-faults as well as along the northeasterly fault system. Most of the ore shoots are from 1 foot to 6 feet wide, but in the Hector mine one ore shoot, now being developed, is 35 feet wide on the 650 level (650 feet below surface).

Galena, sphalerite, and freibergite are the principal ore minerals. The galena normally carries from 60 to 200 ounces of silver a ton but in places, where freibergite is present, the ore carries greater quantities of silver, reaching as much as 2,000 ounces. The gangue is coarsely crystalline manganeseiferous siderite and quartz, with minor quantities of calcite and, rarely, barite. Most of the veins contain in addition some pyrite, arsenopyrite, gold, and chalcopyrite and in a few deposits there are small amounts of ruby silver ore (pyrrhotite and proustite). Post ore fault movements in the Belikeno mine produced brecciated sulphide deposits that have since been reworked by circulating ground waters that redeposited lead and zinc as carbonates. The cerussite and smithsonite coat and form a cement about the primary sulphides.

Prospectors searching for the silver-lead deposits have had success in the past by watching for float of black weathered manganeseiferous siderite with which there may be more or less associated vein quartz. Areas underlain by quartzite and greenstone or diorite have been the most favourable for prospecting. Search should also be directed in the neighbourhood of small bodies of conglomerate that have been cemented by limonite. One of these occurs in the map-area at elevation 3,100 feet along the most easterly stream entering Mayo Lake from the north.

REFERENCES

- Cockfield, W. E. (1921) Keno Hill; Geol. Surv., Canada, Sum. Rept. 1920, pt. A, pp. 1-6, and Sum. Rept. 1923, pt. A, pp. 1-27.
- Stockwell, C. H. (1926) Galena Hill; Geol. Surv., Canada, Sum. Rept. 1925, pt. A, pp. 1-14.
- Bostock, H. S. (1947) Mayo; Geol. Surv., Canada, Map 890A.
- McTaggart, K. C. (1950) Galena Hill and Keno Hill; Geol. Surv., Canada, 1950, Maps 50-20B and 50-20A.



INDEX MAP

PRELIMINARY MAP 55-12  
**KENO HILL**  
YUKON TERRITORY

SHEET 105 <sup>M</sup>/<sub>14</sub>

Air photographs covering this map-area may be obtained through the National Air Photographic Library, Topographical Survey, Ottawa, Ontario