OTHER INVESTIGATIONS

GEOLOGY AND GEOCHEMISTRY OF POSSIBLE URANIUM SOURCE ROCKS IN THE EAST OKANAGAN URANIUM AREA (82 E, L)

By T. K. Sills
Graduate Student
Department of Geology, University of Calgary

This project was sponsored by the British Columbia Ministry of Mines and Petroleum Resources and carried out as partial fulfillment of the requirements for a Master of Science degree at the University of Calgary. The project consisted of mapping portions of the thesis area (Fig. 29) at scales of 1:31 680 and 1:15 840 and concurrent sampling of basement rocks both in outcrop and in diamond-drill holes. Previous geological mapping (Christopher, 1976) was expanded to include a larger area around and between known uranium occurrences (Christopher, 1977, 1978). The scope of the project was to examine in detail the relationship between Tertiary basal-type uranium occurrences and the underlying basement rocks and to determine the source(s) of the uranium mineralization.

Of the 196 samples collected during the 1977 and 1978 field seasons (Fig. 29) 180 samples were collected from the East Okanagan uranium area while 16 samples were for comparison. The samples are being analysed for a variety of major, minor, and trace elements to determine if selected elements or element ratios will indicate source rocks for uranium in the basal-type occurrences.

Preliminary data (radiometric and geochemical) indicate that Valhalla quartz monzonites and the Coryell syenites contain high background amounts of uranium (10 to 15 ppm). Minor intrusive phases of muscovite-biotite granite also have high background concentrations of uranium.

The variation of uranium with volatiles (Li, Be, F, Cl) and immobile elements (Ba, K, Th) may indicate rocks with initially high uranium concentration (Alder, 1977) which have subsequently been leached. If these variations in element content prove valid, similar lithologies in other areas could be evaluated rapidly to determine their potential source rocks for sedimentary or hydrothermal uranium deposits.

REFERENCES

Adler, H. H. (1977): Geochemical Fractors Contributing to Uranium Concentration in Alkalic Igneous Rocks, *in* Recognition and Evaluation of Uraniferous Areas, *International Atomic Energy Agency*, Vienna, 1977, Panel Proceedings Series 450, pp. 35-45.

Christopher, P. A. (1976): Uranium Mineralization in the Hydraulic Lake Area, *B.C. Ministry of Mines & Pet. Res.*, Geological Fieldwork, 1976, pp. 11-13.

..... (1977): Basal-Type Uranium Deposits, South-Central British Columbia, *B.C. Ministry of Mines & Pet. Res.*, Geological Fieldwork, 1977, pp. 12, 13.

..... (1978): East Okanagan Uranium Area (Kelowna to Beaverdell), South–Central British Columbia, *B.C. Ministry of Mines & Pet. Res.*, Preliminary Map 29.

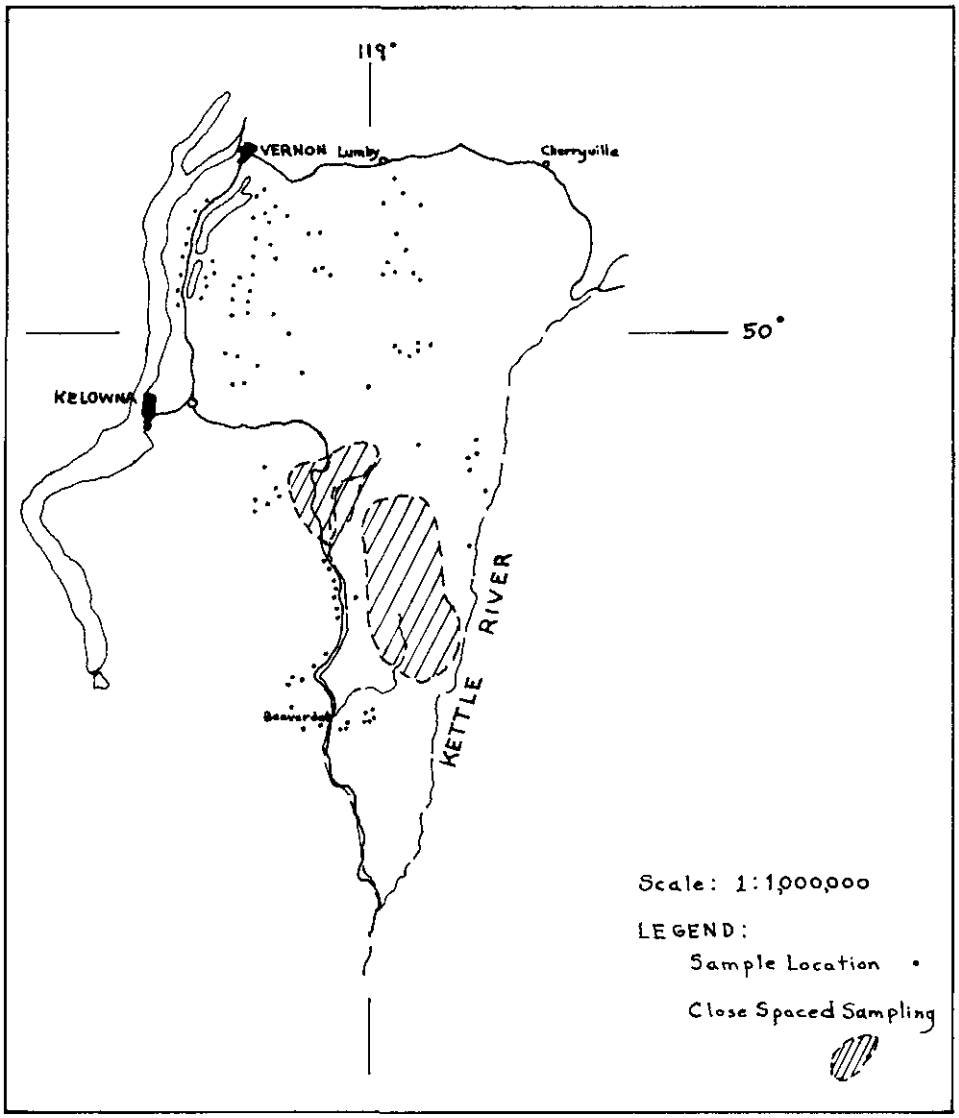

Figure 29. Sample location map, Southeast Okanagan.