UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

MAPS SHOWING DISTRIBUTION OF ANOMALOUS AMOUNTS OF SELECTED ELEMENTS IN STREAM-SEDIMENT AND ROCK SAMPLES FROM THE EAGLE QUADRANGLE, EAST-CENTRAL ALASKA

By

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Open-file report

1971

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Maps showing the distribution of anomalous amounts of selected elements found in nearly 1400 stream-sediment and over 1,000 rock samples have been prepared from results of semiquantitative spectrographic analyses. The samples were collected in the Eagle quadrangle, east-central Alaska, in the summers of 1968, 1969, and 1970.

Figure 1 is a map showing localities for all stream-sediment samples analyzed and indicates by symbols those containing anomalous amounts of one or more of the following elements: gold (Au), silver (Ag), arsenic (As), bismuth (Bi), copper (Cu), chromium (Cr), molybdenum (Mo), nickel (Ni), lead (Pb), antimony (Sb), tin (Sn), tungsten (W), and zinc (Zn).

Figure 2 shows the localities for analyzed rock samples and indicates those containing specified amounts of the same elements as for the stream-sediment samples.

Standard procedures were followed in the collection and preparation of the stream-sediment samples. The samples were generally collected from the active stream channel; where this was not possible, the samples were collected from stream deposits adjacent to the active channel. The samples were dried, sieved, and the minus 80-mesh fractions were analyzed for 30 elements by the six-step semiquantitative spectrographic

method and for gold by the atomic absorption method. The spectrographic analyses were reported in percentage (pct) or parts per million (ppm) to the nearest number in the series 1.0, 0.7, 0.5, 0.3, 0.2, 0.15, 0.1, etc. The precision of a reported value is approximately plus 100 percent or minus 50 percent. Minimum limits of determination in parts per million (ppm) for each element included on the maps are: Silver (Ag) 0.50, Arsenic (As) 200.0, Gold (Au) 0.02, Bismuth (Bi) 10.0, Chromium (Cr) 5.0, Copper (Cu) 5.0, Molybdenum (Mo) 5.0, Nickel (Ni) 5.0, Lead (Pb) 10.0, Antimony (Sb) 100.0, Tin (Sn) 10.0, Tungsten (W) 50.0, Zinc (Zn) 200.0.

The rock samples were of many different kinds and included mineralized specimens such as those high in visible sulfides, vein quartz without visible mineralization, rock from sheared and altered zones, and representative rock types. After crushing, rock samples were processed and analyzed in the same manner as stream-sediment samples.

The results of the analyses of the stream-sediment and rock samples were processed by means of a computer program known as Geosum. These processed analyses have been previously presented in the following reports: Foster and Clark, 1969; Clark and Foster, 1969a; and Foster, 1970 and 1971a and b. On the basis of histograms from the computer output, the following values were selected as anomalous for the stream-sediment samples: copper (Cu) 100 or more ppm; lead (Pb) 50 or more ppm; nickel (Ni) 100 or more ppm; chromium (Cr) 200 or more ppm; molybdenum (Mo) 5 or more ppm; and any reported value for gold, silver, tungsten, arsenic, antimony, zinc, tin, or bismuth.

The selection of these concentrations as anomalous values is subjective and interpretive and the local geology must be considered before significance is attached to any anomalous value.

The same concentrations were arbitrarily considered anomalous in rock samples for convenience, but the designation of anomalous has limited meaning without knowledge of the rock sample and its relation to the geology of the area where it was collected. Field identifications of most of the analyzed rocks are given in Foster and Clark (1969), Clark and Foster (1969a), and Foster (1970 and 1971a and b). Additional information on some sample localities is given in Foster and Clark (1970) and Clark and Foster (1971).

Parts of the Eagle quadrangle are not yet sampled, such as the northwest corner, north-central part, and much of the southeastern part of the quadrangle. However, considerable sampling has been done in the southeastern part of the quadrangle under the auspices of the Division of Mines and Minerals, State of Alaska, and the reported results (Saunders, 1966, 1967; Smith, 1968; Burand, 1968; and Asher, 1970) can be used to supplement the data presented here.

The most comprehensive discussion of the geology of the Eagle quadrangle and surrounding areas is a report by J. B. Mertie, Jr. (1937). More recent reports and maps by Foster (1969a and b), Foster and Keith (1968, 1969), Clark and Foster (1969a and b, 1971) and Asher (1970) include parts of the Eagle quadrangle.

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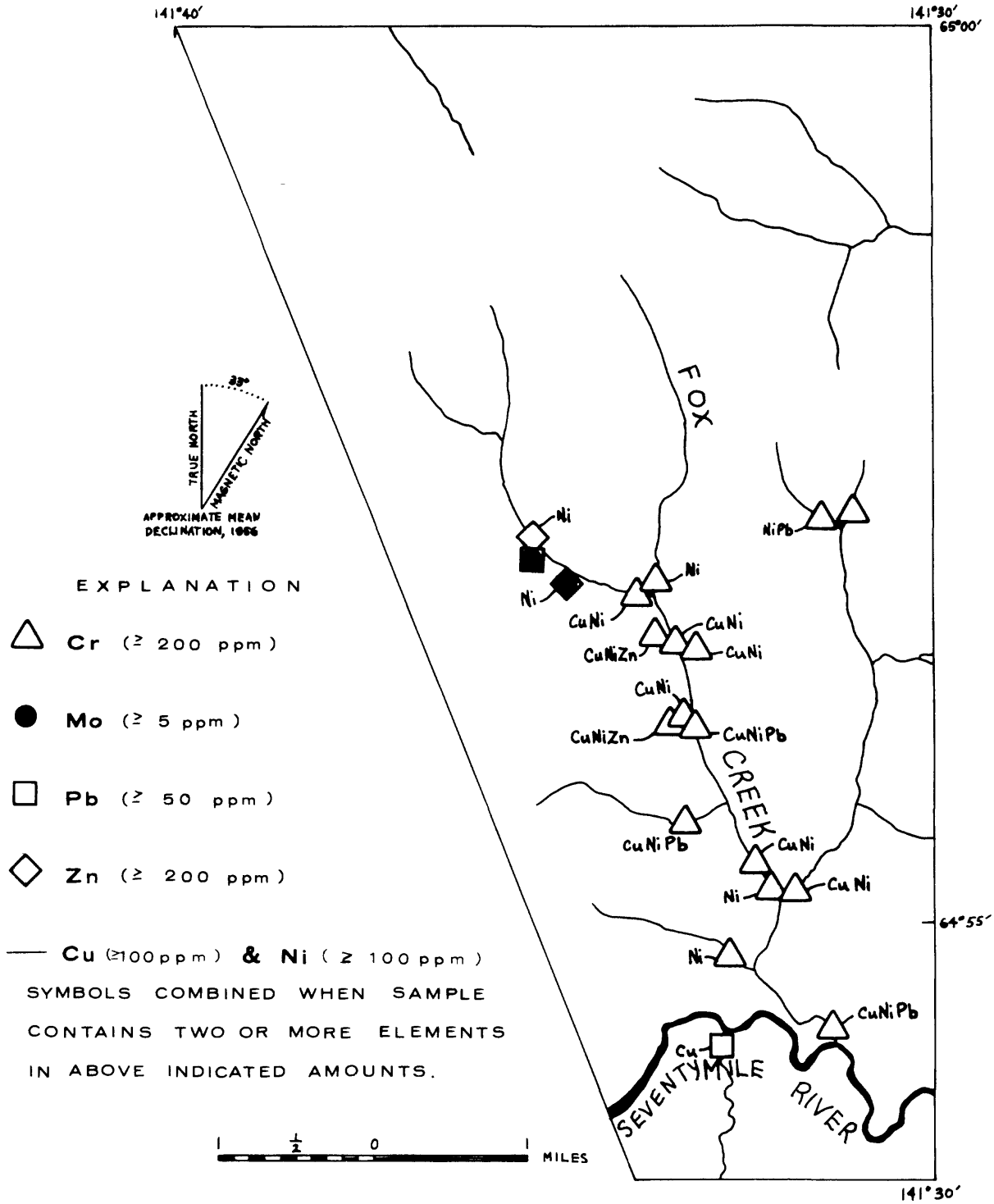

Figure 1a. Detail of stippled area from Figure 1.