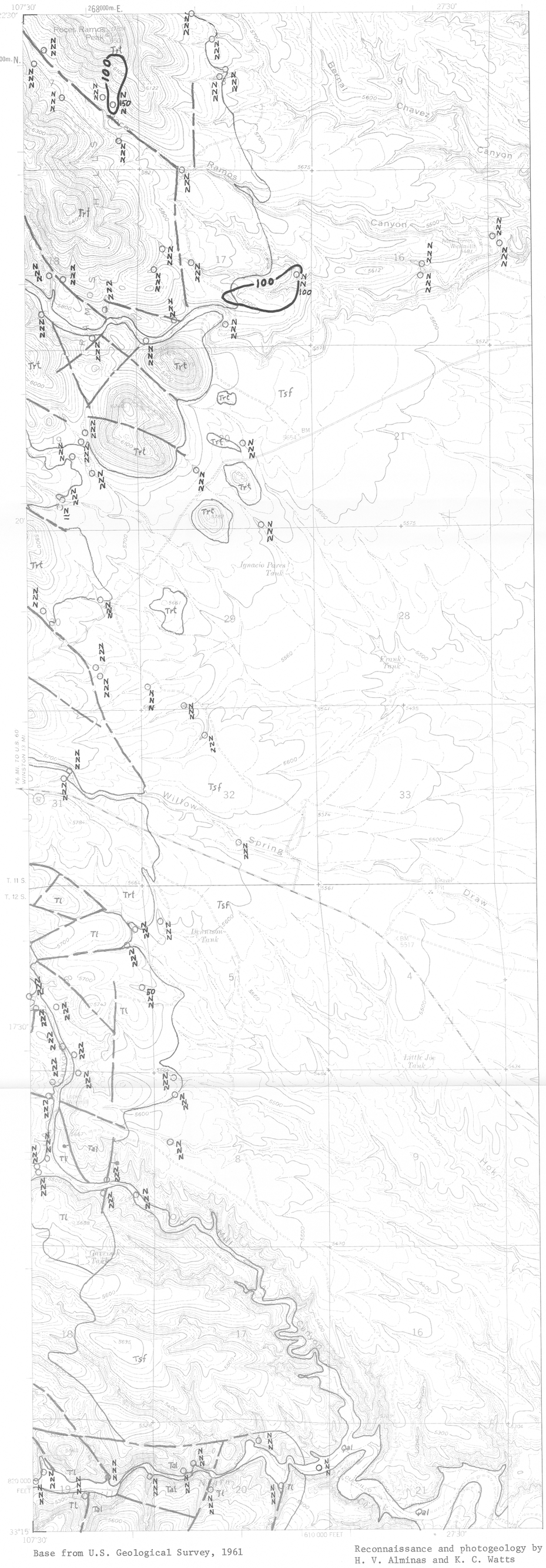
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-401
(SHEET 3 OF 3)




Base from U.S. Geological Survey, 1961

Reconnaissance and photogeology by
H. V. Alminas and K. C. Watts

SCALE 1:24 000

0 1/2 1 MILE

0 .5 1 KILOMETER

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

WEST PART OF THE PRIEST TANK QUADRANGLE

# MAPS SHOWING TUNGSTEN DISTRIBUTION IN THE WINSTON AND CHISE QUADRANGLES AND IN THE WEST PART OF THE PRIEST TANK QUADRANGLE, SIERRA COUNTY, NEW MEXICO

By

Henry V. Alminas, Kenneth C. Watts, and David L. Siems

For sale by U.S. Geological Survey, price $1.50 per set

## EXPLANATION

### QUATERNARY

**Qal** — Alluvium

**Qb** — Late basalt flow

### TERTIARY

**Tsf** — Santa Fe Group as used by Kelley (1955)
Pediment alluvium, conglomerate, and volcanic sediments; includes Palomas Gravel

**Tir** — Intrusive rhyolite
Dominantly plugs and dikes

**Ti** — Dike
Unknown composition

**Trt** — Late rhyolite flows and ash-flow tuff
Medium gray; porphyritic, with phenocrysts of quartz and sanidine; tin bearing

**Tim** — Intrusive monzonite porphyry
Sills, dikes, and laccoliths

**Tl** — Biotite latite and biotite-quartz latite tuff, flows, and related breccia

**Tvr** — Volcanic rocks
Eastern side of Black Range and adjacent areas

**Tr** — Early rhyolitic tuff
Eastern side of Black Range and adjacent area

**Tal** — Early andesite and subordinate latite flows, flow breccia, tuff and agglomerate

**Pzr** — Paleozoic rocks
Dominantly limestone of the Pennsylvanian Magdalena Group and Permian red beds

**p€m** — Precambrian metamorphic rocks

Contact

Normal fault
Dashed where approximately located; dotted where concealed; bar and ball on downthrown side

Lineament traced from aerial photographs

Strike and direction of dip of beds and foliation

Quartz vein

Tungsten contents of three sample types (<80, M-1, NM-1) are given at each sample locality. The <80 sample consists of material finer than 0.177 mm sieved from the total stream sediment. The other two sample types are the heavy portions of concentrates panned from stream sediments and separated in bromoform. The M-1 fraction is that portion of such material not magnetic at 0.1 ampere, but magnetic at a 1.0-ampere setting on a Franz Isodynamic Separator (forward slope 25°, side slope 15°). The portion that is not magnetic at a 1.0-ampere setting is labeled NM-1.

N 100 500 — Present study
N L 1000 — Black Range sample
N 1000 10000 — Stream-sediment sample
N 100

Showing spectrographically determined tungsten content in parts per million. Top number in present study is tungsten value of the <80 fraction; middle number, tungsten value of the M-1 fraction; bottom number, tungsten value of the NM-1 fraction. N is tungsten value below the detection limit. L is tungsten detected below normal sensitivity. A dash means no data on fraction shown. Filled circle indicates sample locality at which the NM-1 fraction contains at least 1,000 parts per million tungsten. Filled triangles represent at least 10,000 parts per million in the NM-1 fraction. In present study, lower detection limit on tungsten is 50 parts per million in rock and fine stream-sediment samples; 100 parts per million in pan concentrates; histograms are shown accordingly. Black Range sample sites (Ericksen and others, 1970) shown by squares for parts of map area in which published Black Range data are used. Top number, <80 fraction comparable to same fraction in present study. Lower value, tungsten content of pan-concentrated stream sediment with magnetite removed; approximately comparable to M-1 fraction.

—100— Isopleth

Approximately delineating areas containing at least 100 parts per million tungsten in the NM-1 or M-1 fraction of concentrated stream sediments.

### References

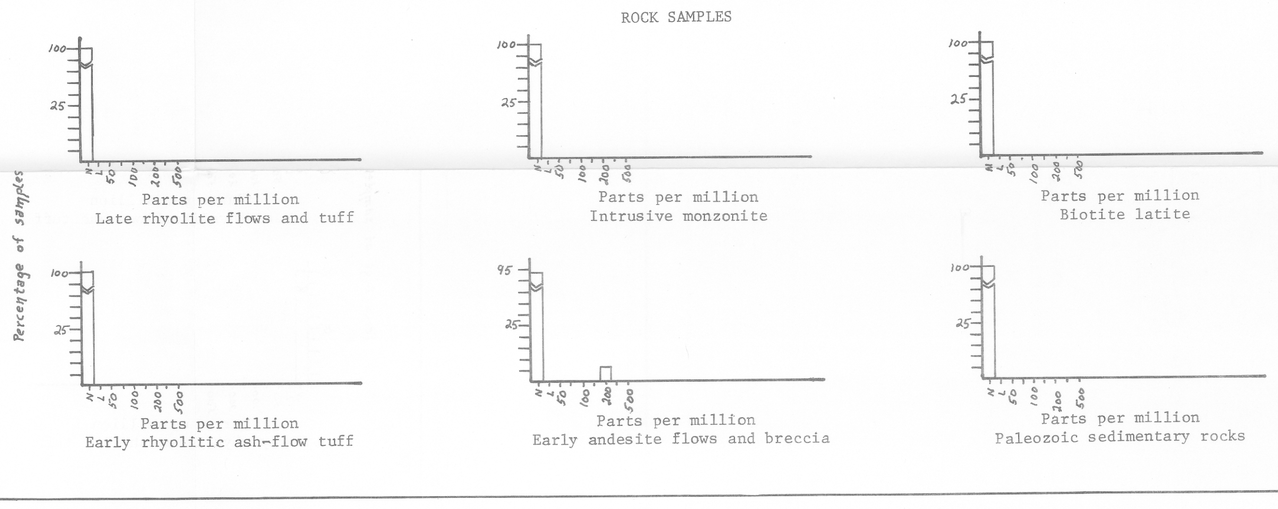
Ericksen, G. E., and others, 1970, Mineral resources of the Black Range Primitive Area, Grant, Sierra, and Catron Counties, New Mexico: U.S. Geol. Survey Bull. 1319-E, p. 49-157.

Jahns, R. H., 1955, Road log in Sierra Cuchillo and neighboring areas [and] Geology of the Sierra Cuchillo, New Mexico, in New Mexico Geol. Soc. Guidebook 6th Field Conf., south-central New Mexico, 1955, p. 25-46, 158-174.

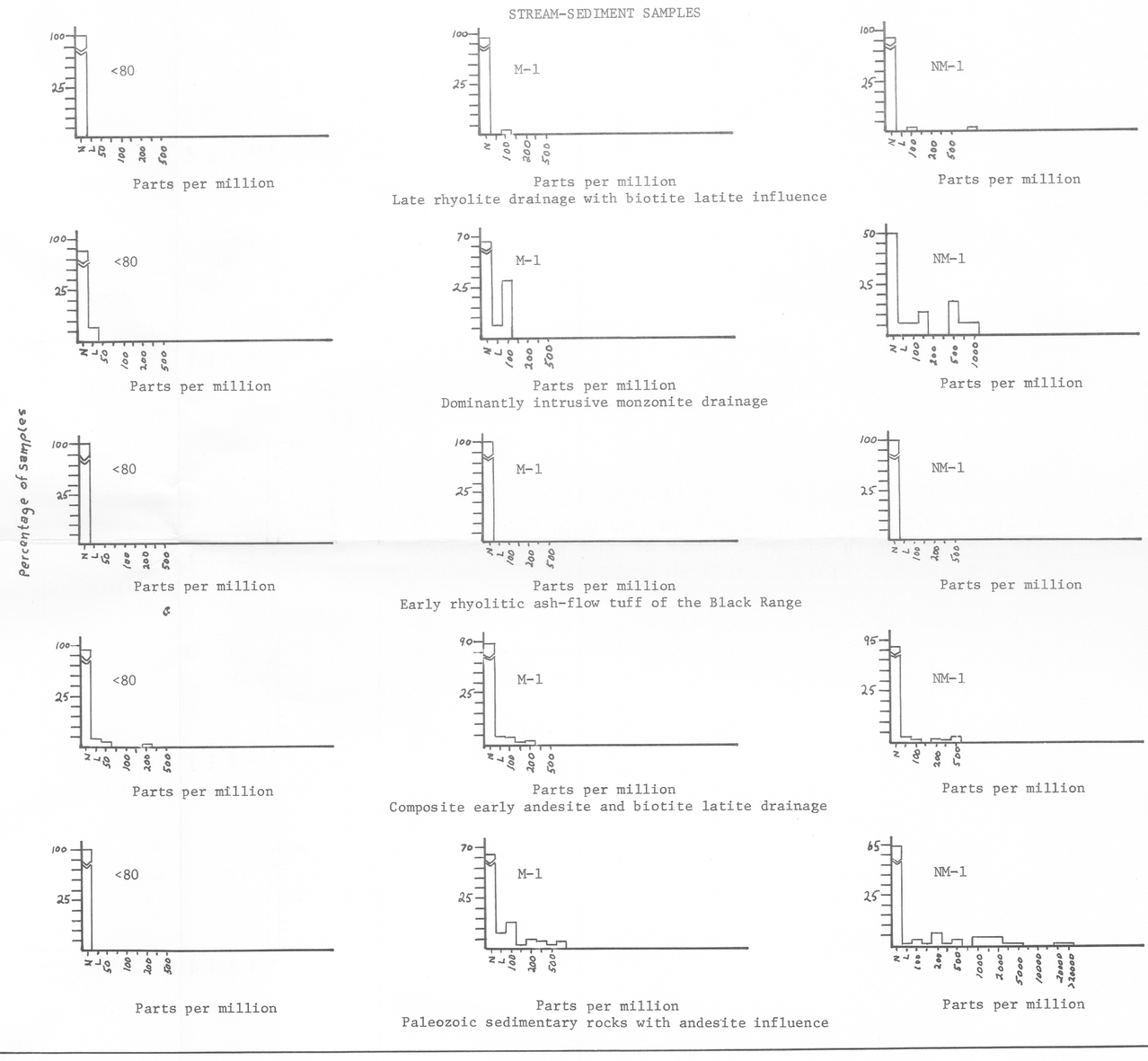
Kelley, V. C., compiler, 1955, Geologic map of the Sierra County region in New Mexico Geol. Soc. Guidebook 6th Field Conf., south-central New Mexico, 1955: In pocket.

## HISTOGRAMS SHOWING TUNGSTEN DISTRIBUTION

### ROCK SAMPLES




### STREAM-SEDIMENT SAMPLES




### TOTAL STREAM-SEDIMENT SAMPLES; TOTAL MAP AREA