

**Geological Survey of Wyoming
Mineral Report 92-2**

**GEOLOGY AND MINERALIZATION OF THE COPPER CREEK
AREA AND NEARBY PROSPECTS, ENCAMPMENT MINING
DISTRICT, SIERRA MADRE, WYOMING**

by

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Senior Economic Geologist
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This field report has not been reviewed for conformity with the editorial standards of the Wyoming State Geological Survey.

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In the 1991 field season, selected rock samples were collected for assay during an inventory of mines and prospects in the Encampment district southwest of Encampment. The samples were analyzed for gold, silver, copper, lead, zinc, and titanium, and some samples yielded very high copper and gold values. Of particular interest were samples collected in the Purgatory Gulch area (sec. 36, T.14 N., R.83W.) and along Copper Creek at the historic Kurtz-Chatterton property (sec. 29, T.14N., R.84W.) (Plate 1).

Sample EN10-91 (Plate 1) was collected from a milky quartz vein containing pyrite with limonite boxworks. This sample assayed 1.3 ounces of gold per ton (40.63 ppm) and 0.1 ounce of silver per ton (3.62 ppm). This vein is relatively narrow (2 to 3 feet wide) and traceable for about 1,000 feet along strike. Samples collected in this same general region in 1988 by the Geological Survey of Wyoming also showed highly anomalous amounts of gold (Hausel, 1989, p. 157-158).

At the historic Kurtz-Chatterton prospect along Copper Creek, widespread copper mineralization was found in association with veins, shears, and stockworks (?) in locally potassic altered Sierra Madre granite (Figure 1). Samples ranged from no detectable gold to 0.9 ounce per ton (28.10 ppm) Au, no silver to 0.2 ounce per ton (7.24 ppm) Ag, and 0.7% to 12.55 % Cu.

The average value of 10 samples from this property was 0.19 ounce per ton (5.96 ppm) Au, 0.06 ounce per ton (2.1 ppm) Ag, and 4.43% Cu (Table 1). This mineralized zone was traced over a strike length of 2,500 feet, and could extend to a total length of 3,500 to 4,000 feet. The width swells to nearly 1,000 feet near the center of the property. The style of mineralization may be similar to copper-gold mineralization recognized at the Copper King mine in the Silver Crown district in the Laramie Mountains west of Cheyenne (see Hausel, p. 86). More sampling and petrographic studies are planned for area.

Sample descriptions

EN1-91: Quartz with boxworks collected from mine dump (12, 14N, 84W).

EN2-91: Cupriferous quartz vein in Cascade Quartzite from mine dump (12, 14N, 84W). Shaft located on fault separating Cascade Quartzite from Jack Creek Quartzite. Location notice-Copper Schist claim.

EN3-91: Prospect pit in mylonite (34, 14N, 84W). Contains common quartz veinlets stained by tenorite and uncommon cuprite.

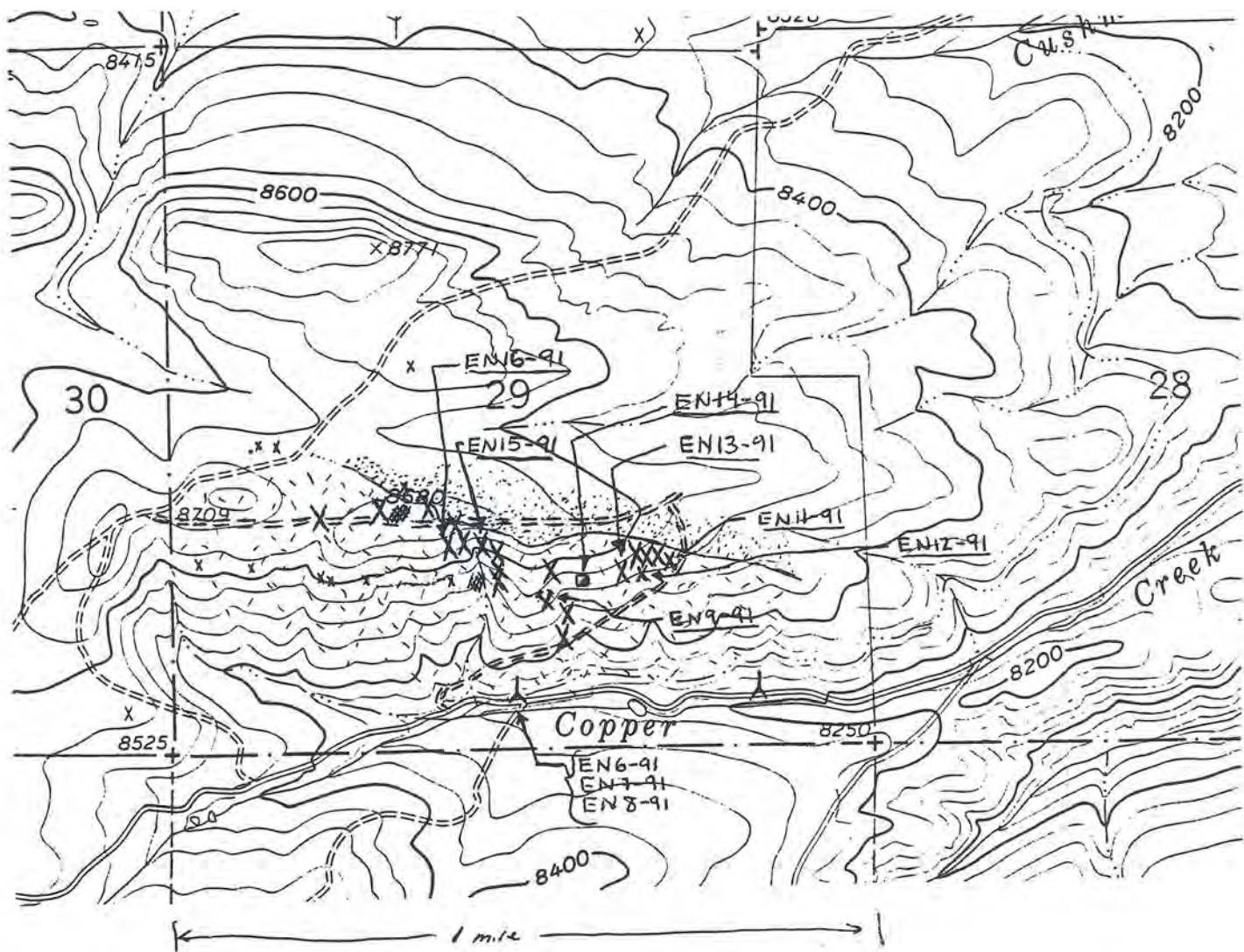
- EN4-91: Fourty to 50 foot deep shaft on narrow milky quartz vein stained with limonite (35, 14N, 84W).
- EN5-91: Limonite boxworks (35, 14N, 84W).
- EN6-91: Quartz with disseminated grains of pyrite (29, 14N, 84W).
- EN7-91: Same dump as EN6-91. Sample contains abundant sulfides partially replaced by cuprite and malachite (29, 14N, 84W).
- EN8-91: Same dump as EN6-91. Limonite boxworks in quartz.
- EN9-91: Collected from small open cut in sec. 29, 14N, 84W. Stockwork (?) and breccia vein in Sierra Madre granite. Sample contains quartz, pyrite, chalcopyrite, and malachite.
- EN10-91: Sec. 36, 14N, 84W. Milky quartz from mine dump with boxworks and pyrite. This is the same mine I found VG a few years ago (see Hausel, 1989, p. 157-158).
- EN11-91: Sample of stockwork (?).
- EN12-91: Copper stained aplite with massive limonite.
- EN13-91: Silicified granite with disseminated pyrite and secondary biotite.
- EN14-91: Silicified granite containing bornite, chalcopyrite, malachite, and specular hematite.
- EN15-91: Silicified granite with stockwork veinlets with chalcopyrite. Secondary muscovite, K-spar, and chlorite.
- EN16-91: Silicified granite with sulfides and secondary biotite, K-spar, muscovite, and chlorite.

Table 1. Analyses of samples from the Encampment area.

sample #	Au (ppm)	Ag (ppm)	Cu (%)	Pb (ppm)	Zn (ppm)	TiO ₂ (%)
EN1-91	nd	nd	--	--	--	--
EN2-91	1.44	6.4	11.10	30.8	6.26	--
EN3-91	nd	nd	0.18	11.1	41.87	--
EN4-91	nd	nd	--	--	--	--
EN5-91	0.68	0.39	--	6.8	8.31	--
EN6-91	12.29	3.00	4.51	11.9	nd	--
EN7-91	15.69	7.24	12.55	37.4	1.57	--
EN8-91	0.95	0.94	--	--	--	--
EN9-91	28.10	3.06	4.34	3.1	nd	--
EN10-91	40.63	3.62	--	--	--	--
EN11-91	nd	nd	0.70	13.3	1.54	0.80
EN12-91	0.34	nd	3.66	6.8	nd	0.10
EN13-91	0.45	nd	1.21	10.4	nd	0.06
EN14-91	1.45	1.44	3.56	12.6	nd	0.02
EN15-91	0.14	2.56	2.35	150.9	2.20	0.04
EN16-91	0.20	2.56	7.27	26.4	4.45	nd

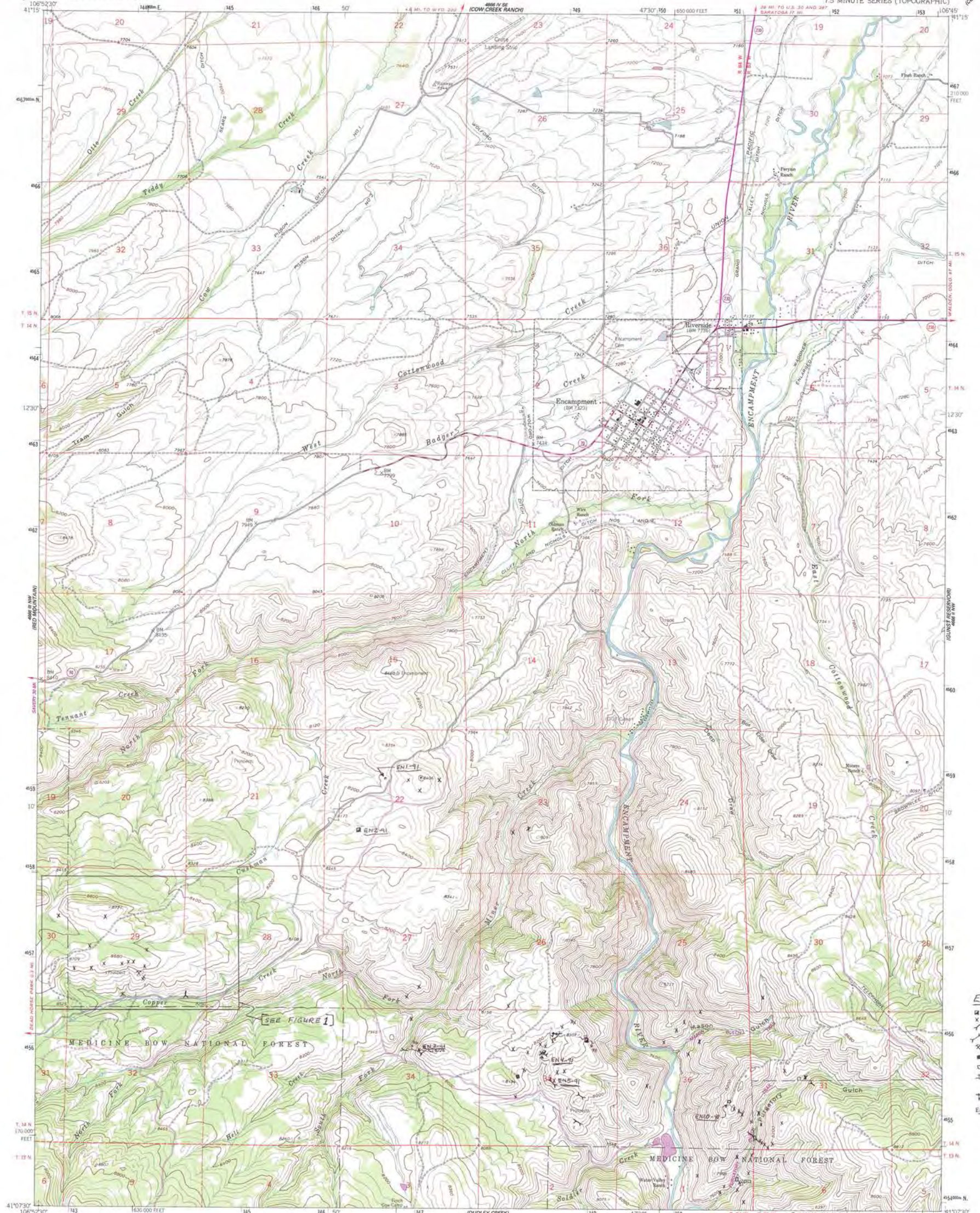
Reference Cited

Hausel, W.D., 1989, The Geology of Wyoming's Precious Metal Lode and Placer Deposits: Geological Survey of Wyoming Bulletin 68, 248 p.



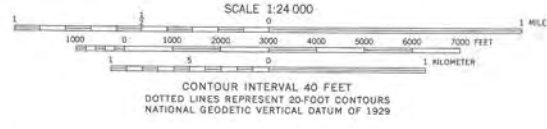
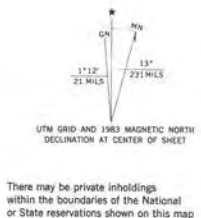
- EXPLANATION
- X prospect pit exposing mineralized rock.
 - x prospect pit - no mineralized rock.
 - X open cut in mineralized rock.
 - ▣ shaft in mineralized rock.
 - └ adit in mineralized rock.
 - ▨ mineralized gossan.
 - ▧ Sierra Madre granite (Proterozoic).
 - ▩ Quartzite (Proterozoic).

Figure 1. Reconnaissance map of the Kurtz-Chatterton copper mine, Encampment quadrangle, Sierra Madre, Wyoming (sec. 29, T.14N., R. 84W.).



- EXPLANATION**
- shaft
 - x prospect pit
 - ∇ adit
 - ∩ trench
 - ⊗ open cut
 - cabin
 - remains of cabin
 - ↔ shear zone showing dip
 - ⊕ vein showing dip
 - ENI-91 sample site

Mapped, edited, and published by the Geological Survey as part of the Department of the Interior program for the development of the Missouri River Basin Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial photographs taken 1958. Field checked 1961
Polyconic projection. 1927 North American Datum
10,000 foot grid based on Wyoming coordinate system, east central zone
1000 meter Universal Transverse Mercator grid ticks, zone 13, shown in blue
Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked
To place on the predicted North American Datum 1983 move the projection lines 7 meters north and 50 meters east as shown by dashed corner ticks



ROAD CLASSIFICATION

- Medium duty
- Light duty
- Unimproved dirt
- State Route
- Primary highway, hard surface

QUADRANGLE LOCATION

WYOMING

ENCAMPMENT, WYO.
41106-87-TF-024

1961
PHOTOREVISED 1983
DMA 4696 III NE-SERIES V874

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST