



CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
416 W. Congress St., Suite 100
Tucson, Arizona 85701
602-771-1601
<http://www.azgs.az.gov>
inquiries@azgs.az.gov

The following file is part of the Grover Heinrichs Mining Collection

ACCESS STATEMENT

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

CONSTRAINTS STATEMENT

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

QUALITY STATEMENT

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

With Compliments of the Author

MAR 2 1936

THE PLUMAS COUNTY COPPER BELT, CALIFORNIA

D. H. McLAUGHLIN
NOTCH BUILDING
CAMBRIDGE, MASS., U. S. A.

17n

By Adolph Knopf
Yale University, New Haven, Connecticut

From "Copper Resources of the World"
XVI International Geological Congress
Washington, 1933



The Plumas County copper belt, California

By Adolph Knopf

Yale University, New Haven, Connecticut

Engels copper deposits	Page 241	Conclusions	Page 244
Superior mine	243	References	244
Walker mine	243		

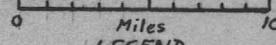




121°

120°

GEOLOGIC MAP OF PLUMAS COUNTY, CALIF. SHOWING HOLDINGS OF WESTERN REALTY CO.



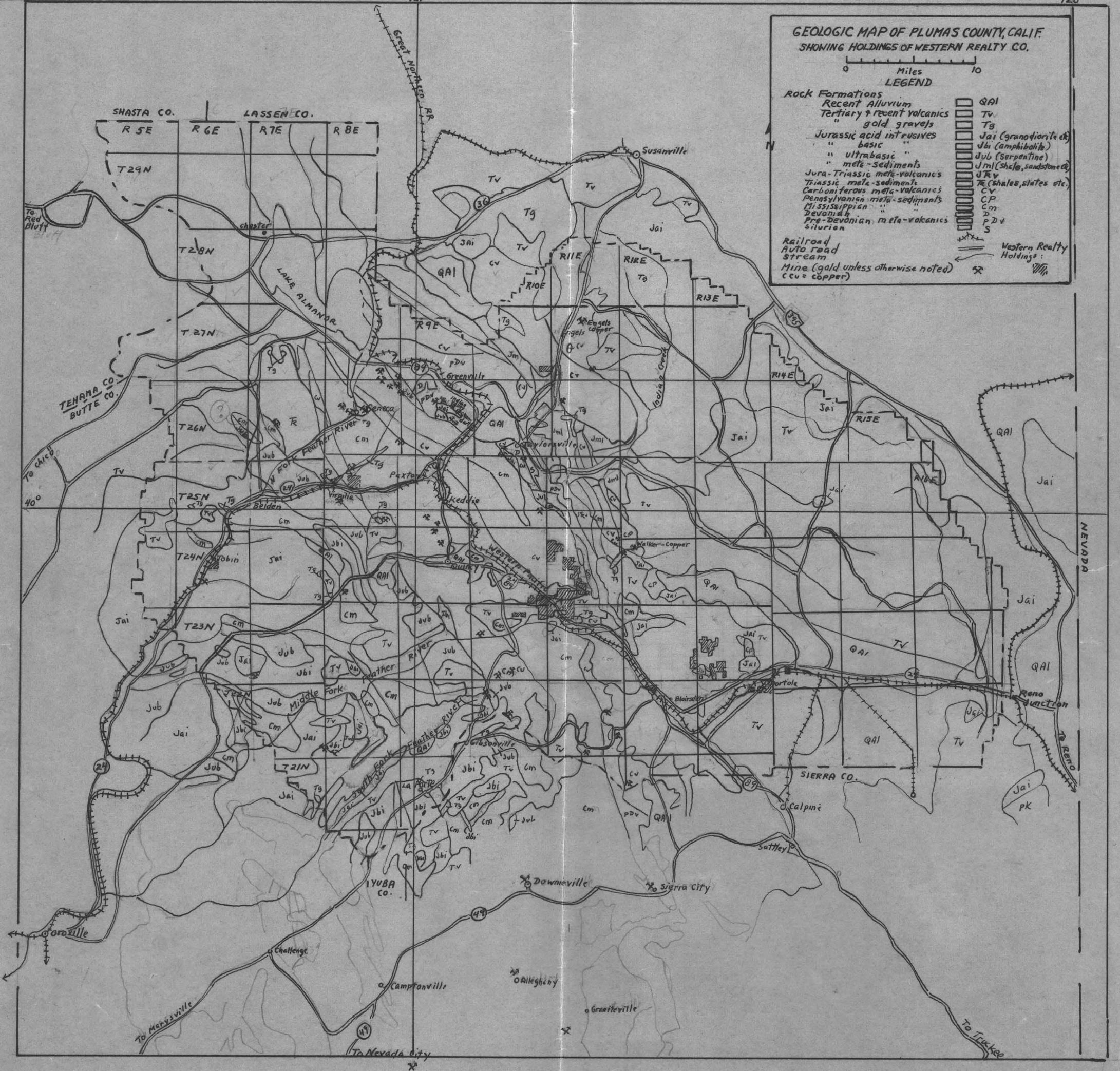
Miles

LEGEND

- Rock Formations
- Recent Alluvium
- Tertiary & recent volcanics
- gold gravels
- Jurassic acid intrusives
- basic
- ultrabasic
- meta-sediments
- Jura-Triassic meta-volcanics
- Triassic meta-sediments
- Carboniferous meta-volcanics
- Pennsylvanian meta-sediments
- Mississippian
- Devonian
- Pre-Devonian meta-volcanics
- Silurian

- QAI
- Tv
- Tg
- Jai (granodiorite etc)
- Jbi (amphibolite)
- Jub (Serpentine)
- Jml (shale, sandstone etc)
- JTv
- Ts (shales, slates etc)
- Cv
- CP
- cm
- D
- PdV
- S

- Railroad
- Auto road
- stream
- Mine (gold unless otherwise noted)
- (cv = copper)
- Western Realty Holdings



EDWARD WISSER

MINING GEOLOGIST
204 SHARON BUILDING
SAN FRANCISCO 5
TELEPHONE GARFIELD 6157

May 24, 1946

Western Realty Co.
526 Mission St.
San Francisco, Calif.

To Edward Wisser, Dr.

To professional services, office report, Plumas County
land holdings.....\$100.00

*mc ✓
ok
ace*

Approved

Stuart Jenkins

Plumas County.

GILBERT
RESERVE BOND
EDWARD WISSER

MINING GEOLOGIST
204 SHARON BUILDING
SAN FRANCISCO 5
TELEPHONE GARFIELD 6157

May 24, 1946

Mr. Stuart Jenkins
Western Realty Co.
526 Mission St.
San Francisco, Calif.

Dear Sir:

Pursuant to your request, I have studied data available here bearing on mineral possibilities of your company's land holdings in Plumas County, California, and submit my findings in the accompanying report.

Yours truly

Edward Wisser

OFFICE REPORT ON WESTERN REALTY CO. LAND HOLDINGS,
PLUMAS COUNTY, CALIF.

INTRODUCTION.

The land holdings of the Western Realty Co. are roughly indicated on the accompanying map. The areas owned are chiefly cut-over timberland and the company proposes to sell them, mainly for grazing land or back to the Forest Service. Since in either case the price received would be but a few dollars an acre, it is desirable to know, before the land is sold, whether any of it contains possible mineral deposits of value. (It is understood by the writer that mineral rights go with these holdings).

In the last analysis, the answer to this problem can be obtained only by going and looking at the land; but in order to save time on such a trip, it is always advisable to gather, summarize and study all information available in local offices. Further, such office data may in some cases save the expense of an entire field trip. The following office report summarizes data on Plumas county bearing on the possible mineral value of Western Realty holdings there.

GEOLOGY OF PLUMAS COUNTY.

The general geology of the Plumas region, while complicated and not easily explained to the layman, has a direct bearing on the possible value of the holdings under discussion, as will be shown below.

The Plumas region covers a portion of the Sierra Nevada mountains, toward the northwest end of that range. During most

of the Paleozoic and Mesozoic geologic ages the area of the present range lay under the sea, and marine sediments (mainly) were laid down on the sea floor. At the close of the Jurassic epoch in the Mesozoic age, these sediments were intensely folded, and intruded by a great mass of granodiorite, a rock like granite, together with smaller masses of serpentine (peridotite) amphibolite and other basic igneous rocks. About the time these intrusive masses cooled, fissures and other openings formed in the tops of the masses and in the sedimentary and metamorphic rocks above and alongside the intrusive masses. Veins of gold-quartz, copper minerals etc. filled these fissures. Among such veins are those of the Mother Lode, of the Grass Valley District, of Alleghany and Sierra City, and of many other districts.

After formation of these ore deposits erosion gradually planed down the early mountain range formed by the folding and intrusion. In many places, especially in the region that contains now the crest of the Sierra, erosion cut very deeply into the granodiorite mass, stripping off its sedimentary cover and any ore deposits it may have contained. Hence today the great mass of granodiorite exposed in the higher (eastern) parts of the Sierra is barren of mines. Elsewhere, and especially west of this granodiorite mass, erosion cut less deeply, or the granodiorite lay lower with respect to the then surface. More of the cover was preserved. It is along this western belt that the great gold mines of the Sierra are found, where granodiorite is restricted to relatively small exposures, with metamorphosed sediments and old volcanics forming the bulk of rocks exposed. (Mother Lode, Grass Valley, Alleghany etc. gold districts). Some of these small granodiorite exposures are not parts of the main mass itself, exposed lo-

cally by erosion, but are cupolas or knobs projecting up from the main mass below. Areas in and around such cupolas are especially favorable for ore deposits. Note on the accompanying map the mines surrounding the cupola south of Greenville (T26N, R9E). The Sierra City-Plumas Eureka gold belt lies on the west side of a larger cupola.

Not only do ore deposits favor the vicinity of such cupolas, but they occur in well-defined belts as well, along which cupolas are frequently studded, but which form an ore locus to some extent independent of the cupolas. The Mother Lode is the most important example, but one shown on the map is the Sierra City-Plumas Eureka belt. This belt seems to coincide with a long, narrow exposure of pre-Devonian rhyolite (pDv on the map). Note that the belt mentioned lines up with a similar one, also connected with pre-Devonian rhyolite, near Greenville, and containing the cupola mentioned at the top of this page. The rhyolite probably persists, beneath the present surface, across the gap between the two belts, and the string of gold deposits associated with this rock may persist as well, linking the Plumas Eureka belt with the Greenville belt. If so, the company holdings in Townships 23, 24N and Ranges 10, 11 E straddle this supposed gold zone.

In a larger sense, Plumas county shows a broad band of sedimentary and basic igneous rocks, studded with small granodiorite cupolas, between two great masses of granodiorite. Most of the Plumas County mines lie in the northwest-trending belt; the Vergilia and other mines form a zone along the southwestern boundary of this belt, while the Greenville and Plumas Eureka belts lie along the northeastern border.

From a still larger viewpoint, Plumas County lies along the

northern extension of the great Mother Lode-Grass Valley-Alleghany gold belt, and while gold production of Plumas County has been far less than that of the counties along the belt to the south, it must be remembered that Plumas County, owing to its rugged and high relief and lack of roads until recently, has been inaccessible and forbidding to prospecting.

During the period of erosion mentioned (Cretaceous and early Tertiary periods) conditions were ideal for formation of placer gold deposits. Weathering of the ground in a humid climate and with gentle topography loosened gold from veins and veinlets, and the gentle and meandering grade of the rivers favored concentration and deposition of rich placers, the famous "Tertiary gravels". Toward the end of the Tertiary a period of intense volcanic activity commenced, burying many of the gold gravels beneath hundreds of feet of lava flows and ash. At the same time, the present Sierra Nevada mountains started to form, by a tilting of the whole region, whereby the eastern portion, that coinciding with the present crest of the range, was greatly uplifted with respect to the western portion. This tilting gives the Sierra its present aspect: a gradual western slope and a precipitous eastern scarp. The result was formation of the present streams, often entirely distinct from the old, graded streams that accumulated the Tertiary gold placers, and the cutting of the mighty canyons seen today. These canyons owing to their steep grade were not favorable to the formation of placers, even where they cut across the old gold channels; much of the gold was washed down and deposited only on reaching the Great Valley, which is the seat of most placer mining (dredging) in this region today.

Owing to this recent canyon cutting, most of the Tertiary placers are now exposed on steep slopes high above the present river beds; many such old channels are buried under great thicknesses of lavas and ash, and are only exposed, if at all, by recent canyons. When followed underground, mines on these old channels are known as drift mines. Before passage of the debris act, many such old channels were mined by hydraulic giants, the gold being caught in the riffles of sluice boxes. The passage of that act has hamstrung most placer mining other than dredging; owing to the difficulty of disposing of the debris, a placer property in the Sierras today has very dubious value.

In Plumas County, by far the greater part of placer gold mine came from the area southwest of a line drawn between Downieville and Quincy; \$60,000,000 in gold is said to have been shipped from La Porte alone. The richest portion of this area was along the belt of serpentine shown on the map, extending from west of the Virgilia mine to Gibsonville. Where the old river channels crossed this belt they were very rich. The gold however came, not from strong, large veins but from a multitude of small stringers, mostly along the contacts of the serpentine belt. Hence there are few lode mines along this belt. The Sierra City-Plumas Eureka gold belt, in contrast, is marked by lode gold mines, but was not crossed by any Tertiary river channels.

POSSIBLE VALUE OF COMPANY HOLDINGS.

T27N, R10E.- The fraction of a section held here seems without mineral interest; it appears to lie too close to the main granodiorite mass in the eastern part of the county.

T25N, R8E.- This section is of decided interest. A Tertiary

gold channel, comes close to it, or possibly enters it, and the section lies close to the Virgilia gold mine, a considerable producer. The section, with the Virgilia mine, lies along the southwest border of the broad ore zone mentioned.

T24N, R6E (Tobin).- This ground would only be of interest from the standpoint of placer operations along the North Fork of the Feather River, something quite unlikely.

T24N, Ranges 10, 11E; T23N, Ranges 10, 11E.- Tertiary gravel appears in the southeast part of these holdings; it has been pointed out on page 3 that these groups lie along a possible ore zone of importance. This land should not be sold without careful examination.

T23N, Ranges 12, 13E.- While a small granodiorite cupola is exposed here, surrounded by a great thickness of recent volcanic ash, these holdings do not look attractive. Should an engineer be sent into the field, however, they may as well be looked at.

T22N, R13E (Portola).- This small block, in alluvium, appears without interest.

CONCLUSION.

The blocks described as favorable in this report should be examined before sold. If encouraging showings are found the work may require several weeks. If any portions look sufficiently attractive, consideration should be given the possibility of a deal whereby surface rights are sold and mineral (lode) rights retained.

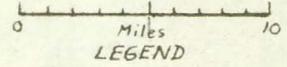
San Francisco, May 24, 1946

E. W.
Edward Wisser

121°

120°

GEOLOGIC MAP OF PLUMAS COUNTY, CALIF. SHOWING HOLDINGS OF WESTERN REALTY CO.



LEGEND

- Rock Formations**
- Recent Alluvium QAI
 - Tertiary & recent volcanics Tv
 - " gold gravels Tg
 - Jurassic acid intrusives Jai (granodiorite etc)
 - " basic Jbi (amphibolite)
 - " ultrabasic Jub (Serpentine)
 - " meta-sediments Jmi (shale, sandstone etc)
 - Jura-Triassic meta-volcanics JTv
 - Triassic meta-sediments Tr (shales, slates etc)
 - Carboniferous meta-volcanics Cv
 - Carboniferous meta-sediments Cp
 - Mississippian Cm
 - Devonian D
 - Pre-Devonian meta-volcanics PdV
 - Silurian S
- Railroad**
- Auto road**
- Stream**
- Mine (gold unless otherwise noted)**
- Cu: copper**
- Western Realty Holdings:**

