

**CORRELATION OF MAP UNITS**

QTs	QUATERNARY AND TERTIARY
Tv	
TKg	TERTIARY AND CRETACEOUS
TKd	
Unconformity	CAMBRIAN
Cs	
Unconformity	LATE AND MIDDLE PROTEROZOIC
ZYd	
Yps	Missoula Group
Ywh	
Yeb	Belt Supergroup
Yp	
Unconformity	EARLY PROTEROZOIC
Xag	

**DESCRIPTION OF GEOLOGIC MAP UNITS**

QTs	VALLEY FILL DEPOSITS (QUATERNARY AND TERTIARY)—Alluvium, glacial deposits, and semiconsolidated to consolidated conglomerate interlayered in places with shale, coal, and volcanic ash; shown only in major valleys and basins or along main stream courses
Tv	VOLCANIC ROCKS (TERTIARY)—Largely andesitic to dacitic welded tuff
TKg	GRANITIC INTRUSIVE ROCKS (TERTIARY AND CRETACEOUS)
TKd	DIORITIC INTRUSIVE ROCKS (TERTIARY AND CRETACEOUS)
Cs	SEDIMENTARY ROCKS (CAMBRIAN)—Includes Red Lion Formation, Hasmark Dolomite, Silver Hill Formation, Flathead Quartzite, and equivalent rocks
ZYd	DIORITIC TO GABBROIC SILLS AND DIKES (LATE AND MIDDLE PROTEROZOIC)
Yps	MISSOULA GROUP (MIDDLE PROTEROZOIC)—Includes Plicher, Libby, Garnet Range, and McNamara Formations, Bonner Quartzite, and Striped Peak, Mount Shields, Shepard, and Snowslip Formations
Ywh	WALLACE AND HELENA FORMATIONS (MIDDLE PROTEROZOIC)
Yeb	RAVALLI GROUP (MIDDLE PROTEROZOIC)—Includes Empire, St. Regis, Spokane, Revett, and Burke Formations
Yp	PRICHARD FORMATION (MIDDLE PROTEROZOIC)
Xag	ANORTHOSITE, SCHIST, AND GNEISS (EARLY PROTEROZOIC)

**CONTACT**

—	FAULT—Dotted where concealed. Bar and ball on down-thrown side; arrows show relative direction of apparent horizontal movement
—▲	THRUST FAULT—Dotted where concealed. Sawteeth on upper plate

Note: The generalized and simplified geologic map was prepared as an underlay for various geophysical and geochemical data collected in the Wallace 1° x 2° quadrangle. A fuller treatment of geologic units and structure can be found on map I-1509-A in the Wallace CUSMAP folio.

The map is part of a folio of maps of the Wallace 1° x 2° quadrangle, Montana-Idaho, prepared under the Continental United States Mineral Assessment Program (CUSMAP). Background information about this folio is published in U.S. Geological Survey Circular 920.

**DISCUSSION**

This map summarizes the favorable and unfavorable ground for the principal metallic mineral resources in the Wallace quadrangle. The map was compiled from other maps in the Wallace CUSMAP folio that show mineral resource appraisals for the seven recognized types of potential ore deposits: placer gold, stratabound copper-silver, Sullivan-type stratabound

lead-zinc-silver, porphyry molybdenum-tungsten, platinum-group metals, epithermal silver, and mesothermal base- and precious-metal veins. Where two or more types of potential ore deposits exist in the same area, the map shows the highest potential for any type of occurrence.

Minor occurrences of uranium minerals, barite, and fluorite are also found in the quadrangle. Ores of these minerals do not appear to be widespread, and production of uranium, barite, and fluorite is limited to only a few tens of short tons from the entire area, some of that production has been as byproducts from extraction of other ores, principally those in mesothermal veins. We have not made an extensive appraisal of these minor ores, but locations of mines from which they have been produced are identified on the mineral occurrence map that is part of the Wallace folio (Chesson and others, 1984).

The Wallace quadrangle is typical of much of western Montana and of Idaho in the sense that it represents highly mineralized ground. Very little of the quadrangle, which covers about 17,000 km<sup>2</sup>, can be declared totally unfavorable for the occurrence of some metallic mineral resources. This appraisal is a geologic, not an economic, evaluation; it does not consider current price, future demand, mine-plant technology, or extraction technology. Furthermore, this appraisal is only for metallic mineral resources and does not include an evaluation of oil and gas potential in the part of the overthrust belt represented in the quadrangle. A meaningful appraisal for oil and gas potential cannot be made at this time, primarily because the kinds of data required for such an appraisal are only beginning to be collected by government and industry. When sufficient data from seismic lines and deep bore holes become available, a companion appraisal of oil and gas potential in the Wallace quadrangle would help complete a total evaluation of its resource potential.

**EXPLANATION FOR RESOURCE APPRAISAL**

OUTLINE OF GROUND FAVORABLE OR UNFAVORABLE FOR METALLIC MINERAL RESOURCES

PROBABILITY FOR OCCURRENCE OF METALLIC MINERAL RESOURCES

H	Highly diagnostic
M	Moderately diagnostic
L	Slightly diagnostic
h	Highly suggestive
m	Moderately suggestive
l	Slightly suggestive
U	Unfavorable

**GENERAL REFERENCES**

Chesson, Sharon, Griffith, Thomas, and Wallace, R. R., 1984, Maps showing mineral occurrence data for the Wallace 1° x 2° quadrangle, Montana and Idaho: U.S. Geological Survey Miscellaneous Field Studies Map MF-1354-F.

Harrison, J. E., Cressman, E. R., Long, C. L., Leach, D. L., and Domenico, J. A., 1986, Resource appraisal map for Sullivan-type stratabound lead-zinc-silver deposits in the Wallace 1° x 2° quadrangle, Montana and Idaho: U.S. Geological Survey Miscellaneous Investigations Series I-1509-G.

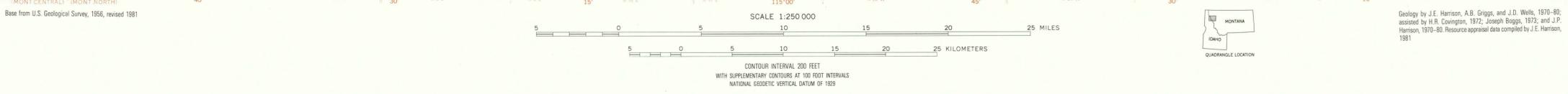
Harrison, J. E., Domenico, J. A., and Leach, D. L., 1986, Resource appraisal map for placer gold in the Wallace 1° x 2° quadrangle, Montana and Idaho: U.S. Geological Survey Miscellaneous Investigations Series I-1509-E.

1986, Resource appraisal map for stratabound copper-silver deposits in the Wallace 1° x 2° quadrangle, Montana and Idaho: U.S. Geological Survey Miscellaneous Investigations Series I-1509-F.

Harrison, J. E., Griggs, A. B., and Wells, J. D., 1981, Generalized geologic map of the Wallace 1° x 2° quadrangle, Montana and Idaho: U.S. Geological Survey Miscellaneous Field Studies Map MF-1354-A.

Harrison, J. E., Leach, D. L., and Kleinkopf, M. D., 1986, Resource appraisal maps for mesothermal base- and precious-metal veins in the Wallace 1° x 2° quadrangle, Montana and Idaho: U.S. Geological Survey Miscellaneous Investigations Series I-1509-I.

Harrison, J. E., Leach, D. L., Kleinkopf, M. D., and Long, C. L., 1986, Resource appraisal map for porphyry molybdenum-tungsten, platinum-group metals, and epithermal silver deposits in the Wallace 1° x 2° quadrangle, Montana and Idaho: U.S. Geological Survey Miscellaneous Investigations Series I-1509-H.



**SUMMARY MAP OF RESOURCE POTENTIAL FOR METALLIC MINERALS IN THE WALLACE 1° x 2° QUADRANGLE, MONTANA AND IDAHO**