

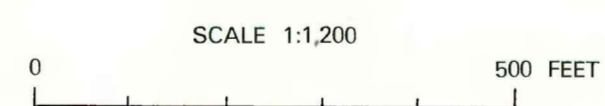
*Dot pattern shown only to clarify location of inferred contact between Tr and Tp on map--the pattern does not designate any particular rock type.

DESCRIPTION OF MAP UNITS

- Qc** COLLUVIUM AND TALUS (HOLOCENE AND PLEISTOCENE)-- Undivided mass-wastage deposits on moderately steep slopes underlain by bedrock; also includes slope-mantling debris resulting from mining and road construction. The bedrock concealed or partly concealed by this unit over most of the mapped area is intrusive rhyolite (unit Tr)
- Qs** SURFICIAL DEPOSITS, UNDIVIDED (HOLOCENE AND PLEISTOCENE)--Poorly consolidated, poorly sorted surficial debris deposited chiefly by glacial ice, landslides, and debris flows. The principal materials present include: 1. greenish- and bluish-gray expandable clay derived from weathering of hydrothermally altered pyroclastic rocks similar to those exposed at Locality B. (unit Tp), 2. gray volcanic sandstone and mudstone that contain abundant carbonized plant debris (unit Ts), and 3. rhyolite fragments up to boulder-size derived from exposures at the head of the ridge west of the map area, known locally as "Rainbow Ridge"
- Qgo** GOSSAN (HOLOCENE AND PLEISTOCENE)-- Orange-brown to dark brown earthy, porous, goethite-rich limonite deposited on the ground surface by a spring. At south margin of deposit rubble derived from weathering of dike (Td) is cemented by the limonite
- Td** DIKE (EOCENE)--Greenish-gray to white, crystal-rich, hydrothermally altered intrusive rock that contains 2 mm rounded quartz grains and rectangular casts as much as 4 mm in size formed by solution of altered feldspar (probably chiefly plagioclase). Quartz content is variable; quartz grains are more common in rocks near south margin of dike. Most samples contain pyrite casts as much as 2 mm in size. Rock now consists chiefly of hard clay. Horizontal prismatic cooling joints common. Joints commonly coated with thin films of goethite or goethite mixed with hematite. For clarity of presentation, the dike is shown as if it crops out continuously even though, in fact, in places it is partly concealed by surficial debris (colluvium and talus; unit Qc)
- Tr** INTRUSIVE RHYOLITE (EOCENE)--Gray to white, hydrothermally altered, flow-laminated, crystal-rich rhyolite that contains 1-2 mm clay pseudomorphs after feldspar and 1 - 2 mm rounded quartz phenocrysts. Hydrothermal alteration has produced a rock that contains variable proportions of quartz and clay minerals, chiefly illite, with local occurrences of sericite (muscovite), chlorite, and pyrophyllite. Locally the rock contains vugs as much as 5 mm in size, lined with quartz, that were produced by solution during alteration. Moderate silicification of the rock enhances visibility of flow lamination in outcrop, but intense silicification obscures both flow lamination and phenocrysts. Iron oxide staining varies from nearly nil to heavy. The stain at most places consists chiefly of goethite, with jarosite present where the rock contains finely disseminated pyrite. Hematite is predominant in exposures on the east side of the hill (Fig. 1). Zircon from the rhyolite yielded a fission-track age of 45.8 ± 2.3 m.y. (C. W. Naeser, written commun., 1982); this value probably indicates the age of mineralization
- Trs** Intensely silicified rhyolite--Gray, commonly massive, resistant to weathering
- Trb** Intensely brecciated and silicified rhyolite-- Angular blocks of rhyolite cemented by white, gray, or black silica. Parts of some brecciated masses contain silicified rhyolite fragments that have been rounded by abrasion during passage of fluids through the brecciated mass, forming so-called "pebble dikes"
- Ts** VOLCANIC SEDIMENTARY ROCKS (EOCENE)--Gray volcanic sandstone, siltstone, and mudstone, commonly thin bedded, with minor conglomerate. Black carbonized plant fragments common. Effects of hydrothermal alteration variable. Rocks adjacent to fault contact with the hydrothermally altered rhyolite intrusion (unit Tr) are essentially unaltered. A few hundred meters farther west these same rocks are limonite stained and altered to clay. A small outcrop at locality A. exposes an altered black rhyolitic vitrophyre and silicified volcanic sandstone and siltstone; the contact relations there were not exposed
- Tp** PYROCLASTIC ROCKS (EOCENE)--A sequence of hydrothermally altered, massive, pumice-rich pyroclastic flows separated by intervals of bedded, sorted, relatively fine-grained pyroclastic rocks. The pyroclastic flows contain pumice pseudomorphs up to 2 cm in size and dark, fine-grained, altered volcanic lithic fragments that commonly are less than 1 cm in size but locally become as large as 5 cm. Bipyramidal quartz up to 3 mm in size usually is the only recognizable phenocryst mineral. In a few samples vague outlines of feldspar and empty casts after biotite can be seen. A distinctive rock type within this sequence is massive mudstone that contains accretion-lapilli--hard mud spheres up to 2 cm in diameter that form bumps on fractured surfaces of the mudstone. This rock type crops out at Localities B. and C. All the pyroclastic rocks are altered to hard clay (chiefly illite). Many outcrops on the east side of the hill also have been silicified; the silicification commonly is expressed by a fine network of quartz-filled hairline veinlets within the rock
- Tps** Intensely silicified pyroclastic rocks

- CONTACT--dashed where approximately located, dotted where concealed, queried where inferred
- - - FAULT--dashed where approximately located, dotted where concealed, queried where inferred; bar and ball on downthrown side; arrow indicates dip of fault plane; half arrows indicate sense of strike-slip motion
- 40 ATTITUDE OF FLOW LAMINAE OR SEDIMENTARY BEDS
- ⊙ HORIZONTAL FLOW LAMINAE OR SEDIMENTARY BEDS
- ⊕ VERTICAL FLOW LAMINAE OR SEDIMENTARY BEDS
- MINOR FOLDS IN FLOW LAMINAE OF RHYOLITE INTRUSION
- 40 Anticline, showing plunge
- ←40 Syncline, showing plunge
- ~40 Series of minor folds, showing plunge of axes
- (Where no numerical value for plunge was measured, no number is shown.)
- ADIT
- ⊖ COLLAPSED AREA-- over abandoned underground mine workings
- A. LOCALITY MENTIONED IN DESCRIPTION OF MAP UNITS
- E 2,000 SUNBEAM MINING CORPORATION COORDINATES (IN FEET)

Base map by Sunbeam Mining Corporation



Geology by D. H. McIntyre and K. M. Johnson, 1982

This map is preliminary and has not been reviewed for conformity with U. S. Geological Survey editorial standards and stratigraphic nomenclature. Any use of trade names is for descriptive purposes only and does not imply endorsement by the USGS.

**GEOLOGIC MAP OF PART OF THE SUNBEAM MINE AREA,
CUSTER COUNTY, IDAHO**

By
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