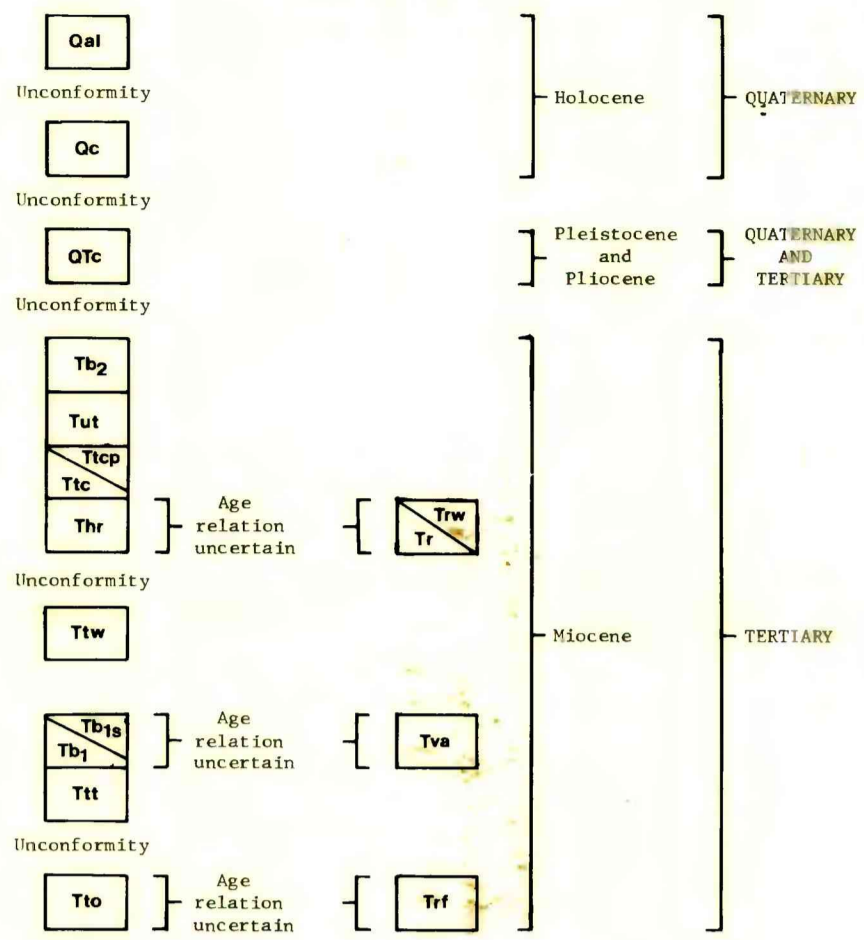


CORRELATION OF MAP UNITS

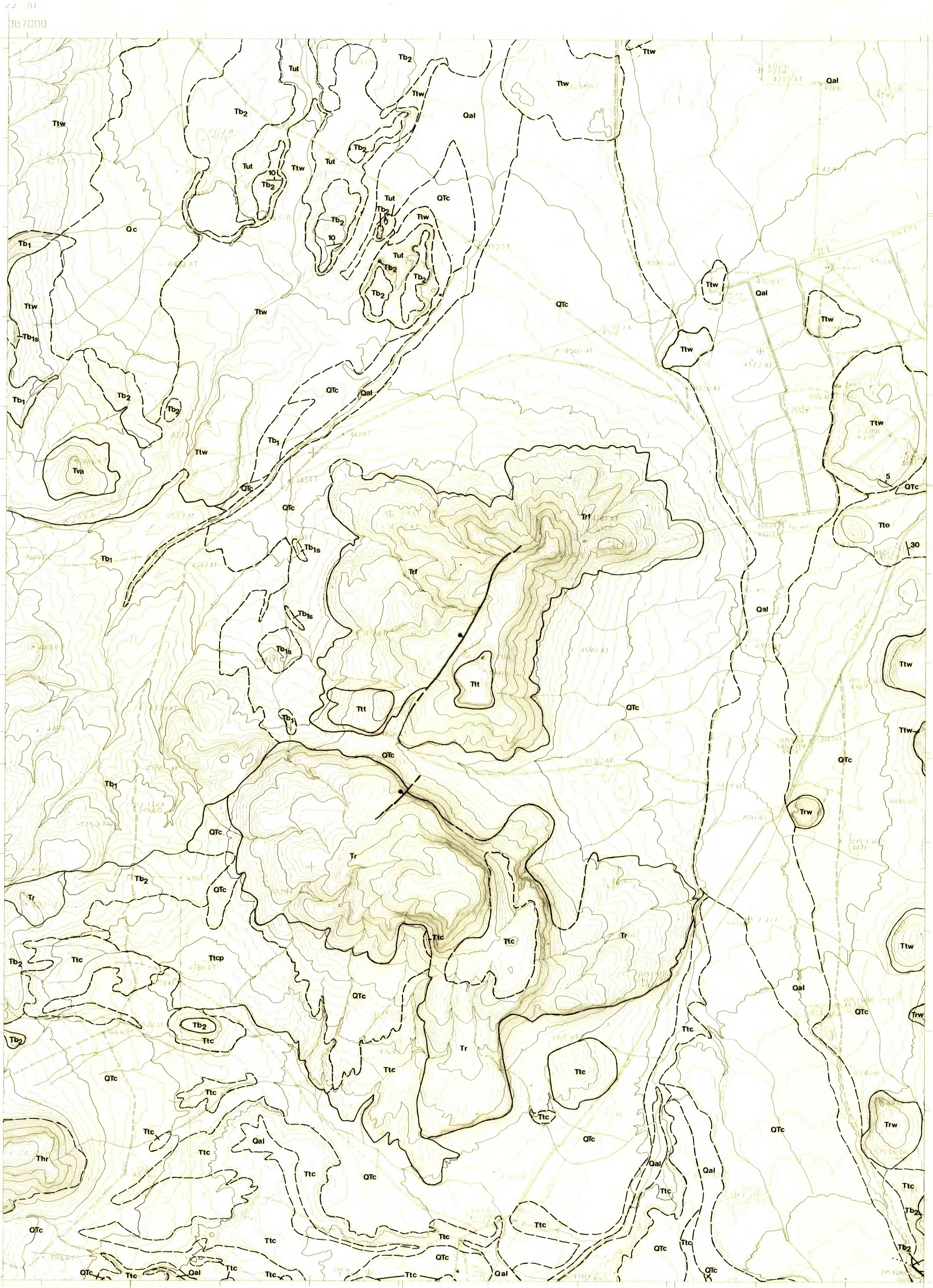
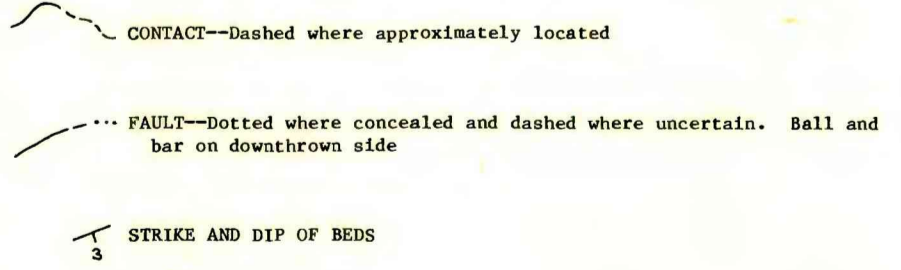


DESCRIPTION OF MAP UNITS

- Qal ALLUVIUM (Quaternary)—Unconsolidated poorly bedded gravel, sand, and silt. Includes talus, stream and terrace deposits.
- Qc CONGLOMERATE (Quaternary)—Weakly consolidated to unconsolidated conglomerate and pebble sandstone. Surface of unit is commonly mantled by residual pebble to cobble size fragments.
- Qtc CONGLOMERATE (Quaternary and Tertiary)—Weakly consolidated poorly bedded conglomerate and sandstone. Locally includes conglomerate and lag gravel.
- Tb2 BASALT FLOWS (Miocene)—Dense black aphyric to weakly porphyritic basalt flows. Flows are locally vesicular and weather dark red brown to tan. Phenocrysts consist of up to 1 percent plagioclase in an aphanitic groundmass. Flow breccia present at base of flows locally.
- Tut UNWELDED TUFFS (Miocene)—Unwelded ash-flow and air-fall tuffs. Pumice lapilli tuff occurs at base and is overlain by yellowish-gray unwelded ash-flow tuff containing pumice and obsidian fragments up to 2 cm in length. A well-sorted gray vitric air-fall tuff occurs in the middle of the unit and is about 3 m thick. The upper part consists of brick-red fine-grained unwelded tuff.
- Ttc TROUT CREEK FORMATION (Miocene)—Formation, first described by Smith (1927), consists of gray to tan tuffaceous sandstone and siltstone and shale interstratified with white to tan diatomite. Pumice lapilli tuff and tuffaceous conglomerate are locally present. Palagonite tuff (Ttcp), which is brown to tan, also occurs near the top of the formation.
- Ttr HORNBLENDE RHYOLITE (Miocene)—Purple-gray to brown porphyritic rhyolite flows with 5 percent smoky quartz phenocrysts, 1 to 14 percent sanidine phenocrysts, 2 percent hornblende and minor magnetite and sphene. Glassy groundmass is devitrified and contains abundant apatite.
- Tr RHYOLITE (Miocene)—Red-gray to white porphyritic rhyolite flows with 1 to 14 percent sanidine and minor magnetite, quartz, and sphene. Glassy groundmass is devitrified but locally black vitrophyre is present at the base of flows. Flow foliation and alignment of vesicles is common. Locally silicified and argillitically altered.
- Trw RHYOLITE DOMES AND FLOWS (Miocene)—Rhyolite of Whitehorse Butte consists of domes and associated flows and flow breccia. Rhyolite is gray to black, aphyric to weakly porphyritic with phenocrysts of sanidine in a glassy groundmass. Contorted flow foliation is common. Flow breccia is monolithologic and contains clasts as much as several meters in diameter.
- Ttw TUFF OF WHITEHORSE CREEK (Miocene)—Unwelded to densely welded peralkaline ash-flow tuff composed of several ash flows as well as interstratified air-fall tuffs. Basal ash flow consists of light-gray to white unwelded aphyric tuff with abundant white to gray pumice in a light-gray ash matrix. Lithic fragments are locally abundant. Above this basal ash flow are beds of air-fall tuff consisting of interstratified lapilli-rich and ash-rich layers. Above air-fall tuff is an ash-flow tuff which is unwelded near base and densely welded at top; locally it is columnar jointed. Ash-flow tuff is light gray, aphyric, and pumice rich at base; it grades upward into a dark-gray to black unwelded tuff containing abundant lithic fragments. Upper welded zone is tan to brown and contains as much as 3 percent phenocrysts of sanidine. Lithophyl zones are common near base of welded zone. Tuff locally rests on basalt, which in places is so obscured by talus from tuff that it may be locally included in this unit. <sup>40</sup>K-Ar date on sandstone of 15.020.3 m.y. (Rytuba and others, 1981).
- Tt1 BASALT AND SEDIMENTS (Miocene)—Black, aphyric basalt flow, locally andygdaloidal, and associated agglomerate. Uppermost flow in unit has large, up to 3 cm long, glassy labradorite phenocrysts. Sediments and tuffs interbedded in the unit, Tt1s, consist of light-gray water-laid tuff and brick-red tuffaceous sediments. Locally conglomerate and pebble sandstone, primarily composed of basalt fragments, are present.
- Tt2 TUFF OF TROUT CREEK MOUNTAINS (Miocene)—Unwelded to densely welded vapor-phase recrystallized comenditic ash-flow tuff. Included in the unit is unwelded tan to yellow-brown air-fall and pumice lapilli tuffs with a total thickness of 1 to 4 m which occur below the base of the tuff. The tuff is a simple cooling unit. Basal part consists of unwelded to partly welded porphyritic gray tuff containing 26 percent anorthoclase phenocrysts, 1 percent ferrodendrite, 1 to 5 percent sanidine, 1 percent magnetite, and 1 percent apatite. Apatite occurs as inclusions in clinopyroxene and all phases contain apatite inclusions. Sparse phenocrysts of augite and hypersthene also are present. Tuff grades upward into black vitrophyre 1/2 to 1 m thick. Above the vitrophyre tuff is densely welded green, blue-green, to green-gray porphyritic tuff containing vapor-phase cavities developed in green matrix. Flattened tan to white pumice up to 5 cm long. Lithic fragments of andesite and basalt up to 4 cm in length are locally abundant. Phenocrysts of anorthoclase vary from about 5 to 25 percent and locally up to 3 percent smoky quartz phenocrysts are present. Tuff is locally columnar jointed. <sup>40</sup>K-Ar date on sandstone of 15.940.3 m.y. (Greene, 1976).
- Tt3 VESICULAR ANDESITE (Miocene)—Aphyric purple to purple-gray andesite flows. Commonly vesicular.
- Tt4 TUFF OF OREGON CANYON (Miocene)—Unwelded to densely welded light-blue-green to white comenditic tuff. Gray to tan air-fall tuffs occur at the base of the unit and are overlain by gray basal vitrophyre 1 to 2 m thick. Above vitrophyre, tuff is blue green to white and vapor-phase recrystallized. Phenocrysts consist of 5.5 percent sanidine, 4 percent quartz, and 1 percent arfvedsonite; they occur in a finely crystalline groundmass of quartz, potassium feldspar, and arfvedsonite. Arfvedsonite gives rock a blue-green color and indistinct rhyolite is peralkaline. Flattened pumice fragments are replaced by quartz, potassium feldspar, and arfvedsonite. Lithic fragments of porphyritic andesite are locally abundant. Top 10 m of tuff is red brown and unwelded to partly welded. Dark-gray to brown partly flattened pumice as much as 10 cm long occur in a red-brown ash matrix. Lithic fragments are abundant in this upper zone. Phenocrysts in top 10 m of tuff consist of 4 percent sanidine, 1.3 percent quartz, and 0.2 percent clinopyroxene. Transition zone from blue-green lower part of tuff to upper red-brown part is gradational over approximately 2 m and consists of red-brown pumice in a green matrix. Unit forms cliffs and locally displays columnar jointing. <sup>40</sup>K-Ar date on sandstone of 16.110.2 m.y. (E. H. McKee, written commun., 1981).
- Tt5 RHYOLITE AND BRECCIA (Miocene)—Medium-light-gray to grayish-blue porphyritic rhyolite flow and flow breccia. Phenocrysts comprise 17 percent of rock and consist of 15 percent subhedral to subequal sanidine and 2 percent magnetite, all in an aphanitic groundmass. Texture generally shows well-developed flow banding with trachytic flow texture.

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Based by U.S. Geological Survey 1978  
 SCALE 1:24000  
 1 MILE  
 0 1000 2000 3000 4000 5000 6000 7000 FEET  
 0 1 2 3 4 5 6 7 8 9 10 KILOMETER  
 CONTOUR INTERVAL 20/10 FEET

This report 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 THE RED MOUNTAIN QUADRANGLE, HARNEY COUNTY, OREGON ,

By  
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