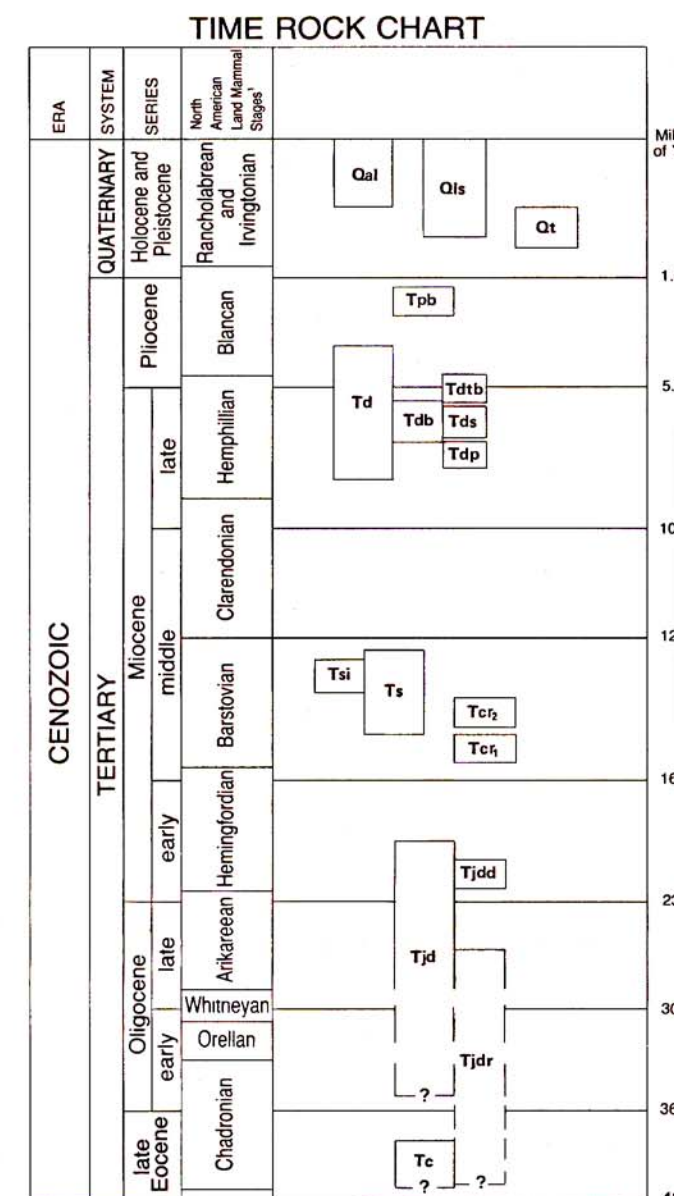


GEOLOGIC MAP OF THE EAGLE BUTTE AND GATEWAY QUADRANGLES, JEFFERSON AND WASCO COUNTIES, OREGON
1987



GMS-43
Geologic Map of the Eagle Butte and Gateway Quadrangles,
Jefferson and Wasco Counties, Oregon
By Gary A. Smith and Glenn A. Hayman



EXPLANATION

Unconsolidated Deposits

- Qal Quaternary alluvium (Holocene) — Silt, sand, and gravel along and in major rivers and streams. Includes deltaic gravels and sands at mouth of Warm Springs River related to ponding of Deschutes River by landslides in Big Cove.
- Qls Landslide debris (Holocene and Pleistocene) — Rotated and slumped blocks, dip planes within and/or near top of Simnashus and John Day Formations.
- Qt Quaternary terrace deposits (Pleistocene) — Gravelly along the Deschutes River locally includes reworked pyroclastic debris and a pyroclastic-flow deposit opposite the mouth of Shilke Creek.

Tertiary basalt (Pliocene) — Diktyastitic olivine basalt flows erupted in the High Cascades. Basalts of this unit west of the map margin have been dated at 3.72 ± 0.11 and 3.99 ± 0.08 m.y. B.P.

Deschutes Formation (upper Miocene and lower Pliocene) — Coarse-grained volcanic sandstones, conglomerates, and debris-flow breccias interbedded with siliceous ignimbrites, air-fall lapillitones, and basalt (Tdb) and basaltic andesite lava flows. Volcanic units are mapped separately where exposed. No attitudes are shown within this unit on the map, although all units are gently inclined toward the basin axis as a reflection of primary dip (the slight dip of a bedded deposit assumed at its moment of deposition), slight subsequent deformation, or both. For detailed description of Deschutes Formation in the map area, see Hayman (1984).

Tellurite Butte member, Agency Plains basalt flow (upper Miocene or lower Pliocene) — Black, fine-grained basalt with phenocrysts and glomerophenocrysts of plagioclase and augite. One of two flows erupted from Tellurite Butte, 5.5 km south of map area, and dated at 5.31 ± 0.05 m.y. B.P.; normal magnetic polarity.

Seokequa basalt member (upper Miocene) — Coarse-grained basalt with phenocrysts and glomerophenocrysts of plagioclase and olivine commonly exceeding 1 cm in length. Columnar jointing and spindles characteristic most outcrops. Basalt extends in a narrow southwest-northeast band across the map area where it filled and overflew an ancestral Deschutes River valley. Normal magnetic polarity.

Pelton basalt member (upper Miocene) — Diktyastitic olivine basalt; lowest volcanic unit in the Deschutes Formation. Dated at 7.42 ± 0.22 m.y. B.P.; normal magnetic polarity.

Simnashus Formation (middle Miocene) — Light-colored tuffs, massive volcanic mudstones, cross-bedded sandstones, and minor pebble conglomerates. Lodge-forming debris-flow breccias crop out southeast of Gateway. Conformable upon and interbedded with the Columbia River Basalt Group (Smith, 1986a). Contains Burrianian (middle Miocene) vertebrate fauna (Downs, 1956) and *Colts* endocorys, but and stem fragments are uncommon but ubiquitous. Includes a white, unwelded, rhyolitic ignimbrite (Tsl) exposed on hill southeast of Gateway.

Columbia River Basalt Group, Prinville chemical type (middle Miocene) — Two flows of aphyric to aphyric hyaloclastic basalt locally separated by Simnashus Formation sedimentary interbed. Unit Ter₁ is dark gray to black with thin upper and lower columnar and thick, glassy embayments. Unit Ter₂ is medium gray to black, weathered brown, blocky jointed, and locally invasive into underlying Simnashus Formation interbed. Both flows are notable for large P_2O_5 (1.15 to 1.40 percent) and Ba (1.750 to 2.350 ppm) contents. Unit Ter₁ contains more SiO_2 (54.5 percent vs. 51 percent) and alkalis (e.g., 3.3 percent vs. 2.1 percent K_2O) and less iron, magnesium, and calcium than unit Ter₂. Both flows are correlative to Prinville chemical-type flows in the Grande Ronde Basalt, N. chron, north of map area (Smith, 1986b).

John Day Formation (Oligocene? and lower Miocene) — Light-colored tuffs, lapillitones, fine-grained volcanic sandstones, and mudstones. Red to brown mudstones and tuff occur near base of unit in northwest corner of map. Most of the formation in the map area belongs to member I of Robinson and others (1984), with paleontologic and isotopic data indicating an early Miocene age, but base of unit probably of Oligocene age.

Dacite (lower Miocene) — Fine-grained, red to black dacite lava (64 percent SiO_2) erupted at Eagle Butte and possibly Te Ween Butte. Lavas are pilotaxitic and interstitial and contain rare phenocrysts of hornblende(?) replaced by magnetite and hematite.

Rhyolite (Oligocene or upper Eocene?) — Fine-grained, yellow-orange, lithophysal rhyolite; highly altered and locally silicified. Overlies tuffs believed to be part of the John Day Formation but may instead be part of the Clarno Formation.

Clarno Formation (upper Eocene) — Dark-gray to brown andesitic lava and breccia; poorly exposed near northwest corner of map.

MAP SYMBOLS

- Contact — Dashed where approximately located
- Syncline axis — Showing direction of plunge
- Thrust fault — Dashed where approximately located; teeth on upper plate
- Strike and dip of bedding

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Field work conducted from 1981 to 1985
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SCALE 1:24,000

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC DATUM OF 1929

GEOLOGIC CROSS SECTION

