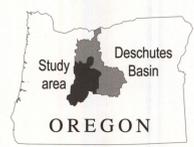
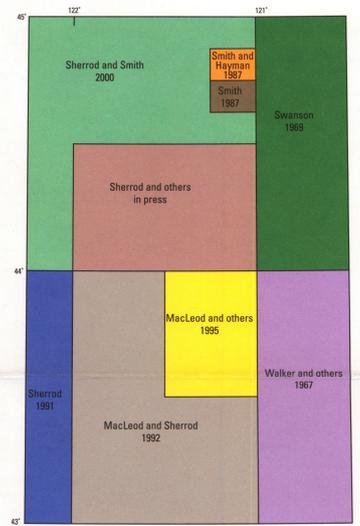


DESCRIPTION OF MAP UNITS

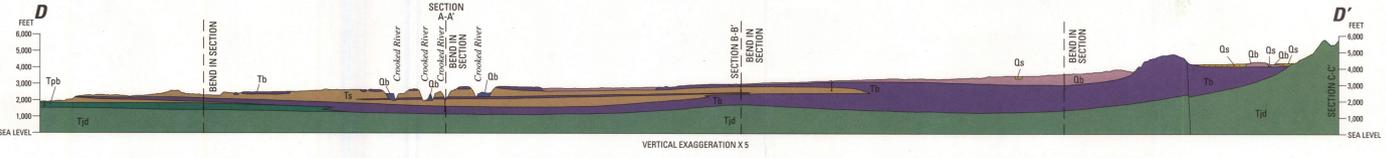
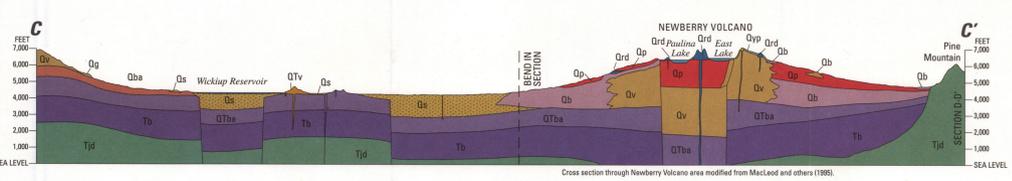
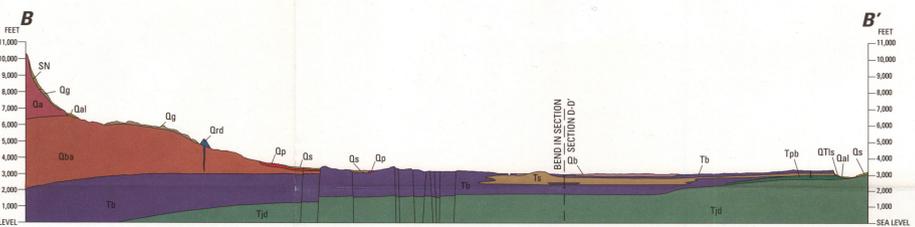
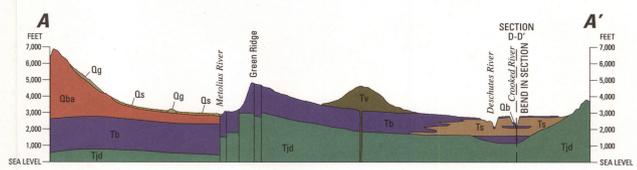
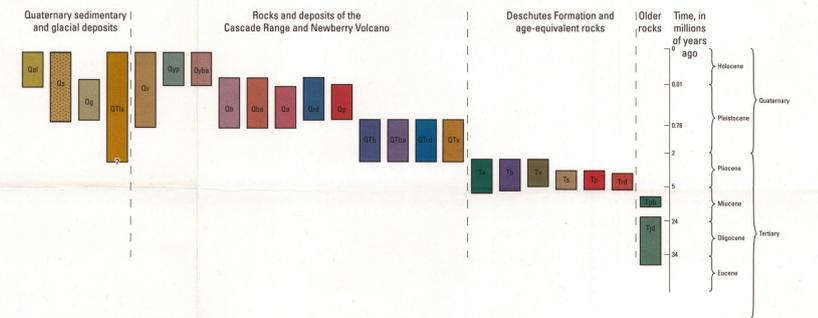
(Map-unit descriptions generalized from those found in Sources of Mapping)

- Quaternary sedimentary and glacial deposits**
 - Qal** Alluvial deposits (Holocene)—Sand, gravel, and silt along channels and flood plains of the present-day drainage system.
 - Qa** Alluvium and glacial outwash deposits (Holocene and Pleistocene)—Silt, sand, and gravel primarily from reworked late Pleistocene glacial deposits in the Cascade Range, and basin-filling deposits from several sources.
 - Qg** Glacial till (Holocene and Pleistocene)—Poorly sorted silt, sand, cobbles, and boulders deposited as ground and lateral moraines primarily during the Cabot Creek and Jack Creek glaciations of Scott (1977).
 - QTa** Landslide deposits (Holocene to Pleistocene)—Slumped blocks of sedimentary rock, tuff, and basalt primarily along valley walls of the major streams.
- Rocks and deposits of the Cascade Range and Newberry Volcano**
 - Qv** Volcanic vents (Holocene and Pleistocene)—Cinders, bombs, blocks, domes, and thick flows that mark basalt, andesite, dacite and rhyolite vents of the Cascade Range and Newberry Volcano.
 - Qyp** Young pyroclastic deposits (Holocene)—Pumiceous ash and lapilli tephra fallout and pumiceous ash-flow deposits from Crater Lake (ancestral Mt. Mazama) and Newberry Volcano.
 - Qyba** Young basalt, basaltic andesite, and andesite (Holocene)—Young basalt, basaltic andesite, and andesite lava flows that occur in and adjacent to the Cascade Range and on the flanks of Newberry Volcano.
 - Qb** Basalt (Holocene and Pleistocene)—Gray, aphanitic to porphyritic lava flows, often open textured and containing some olivine.
 - Qba** Basaltic andesite (Holocene? and Pleistocene)—Gray, aphanitic to slightly porphyritic lava flows of the Cascade Range. Most flows are Pleistocene; all have normal-polarity thermal remanent magnetization and are therefore younger than 0.78 million years.
 - Qa** Andesite (Pleistocene)—Porphyritic lava flows of the Cascade Range, commonly containing phenocrysts of plagioclase, orthopyroxene, and clinopyroxene. All have normal-polarity thermal remanent magnetization.
 - Qrb** Rhyolite, dacite, and rhyodacite (Holocene and Pleistocene)—Porphyritic lava flows found mostly in the Three Sisters area and near the summit of Newberry Volcano.
 - Qp** Pyroclastic flow deposits (Pleistocene)—Andesitic to rhyolitic ash-flow deposits of the Cascade Range and Newberry Volcano. Includes ash-flow deposits in the vicinity of Bend (e.g., Tumalo tuff, Shevlin Park tuff).
 - Qtb** Basalt (Pleistocene and Pliocene)—Generally open-textured, commonly vesicular lava flows. Mapped in the Millican area and south and southeast of Pine Mountain.
 - Qbva** Basaltic andesite (Pleistocene and Pliocene)—Primarily Pleistocene in age and compositionally similar to younger basaltic andesite flows in the Cascade Range. Contains both normal- and reverse-polarity remanent magnetization.
 - Qtrb** Rhyolite and rhyodacite (Pleistocene and Pliocene)—Chiefly domes and thick lava flows in the Cascade Range.
 - Qtv** Volcanic vents (Pleistocene and Pliocene)—Cinders, bombs, blocks, lapilli tuff, tuff breccia, domes, and thick flows that mark older basalt, basaltic andesite, dacite, and rhyolite vents, and maars and tuff rings within the Cascade Range.
- Deschutes Formation and age-equivalent rocks**
 - Tb** Andesite (Pliocene and Miocene)—Includes andesite of McKinney Butte and lava flows interbedded within the Deschutes Formation. Also includes andesite plug, breccia, and lava flows of Castle Rocks volcano.
 - Tp** Basalt (Pliocene and Miocene)—Generally open-textured, typically olivine bearing basalt flows in the Deschutes Basin, High Lava Plains, and at Walker Rim. Includes Pelton basalt and Opal Springs basalt members of the Deschutes Formation.
 - Tva** Volcanic vents (Pliocene and Miocene)—Basalt and basaltic andesite shield volcanoes, cones, tuff, and breccia that mark eruptive centers. Includes deposits forming Awbury Butte, Long Butte, Squaw Back Ridge, Little Squaw Back, and Steamboat Rock.
 - Ts** Sedimentary rocks (Pliocene and Miocene)—Primarily sedimentary rocks of the Deschutes Formation. Includes inactive margin, arc-adjacent plain, and ancestral Deschutes River channel facies of Smith (1986b).
 - Tpa** Pyroclastic deposits (Pliocene and Miocene)—Ash-flow tuff of the Deschutes Formation (Smith, 1986b) and the Payet Tuff (MacLeod and Sherrod, 1992).
 - Tra** Rhyolite and rhyodacite (Pliocene and Miocene)—Rhyolite and rhyodacite domes and related deposits. Includes Cline Buttes and the dome complex near Steelhead Falls.
- Older rocks**
 - Pr** Prineville Basalt (Miocene)—Dark-gray, fine-grained, aphyric lava flows. Chemically distinct (e.g., high F₂O₃, high barium) from younger overlying lava flows (Hooper and others, 1993).
 - Ec** John Day Formation (Miocene to Eocene)—Complex assemblage of lava flows, pyroclastic deposits, sedimentary strata, and volcanic vent deposits (Smith and others, 1988). Strata of similar age and stratigraphic position to the John Day Formation are included in this unit on cross sections beneath the Cascade Range.
- Open water**
 - OW** Open water
 - SN** Permanent ice and snow

SOURCES OF MAPPING
(See report references for complete citations)



CORRELATION OF MAP UNITS



MAP AND CROSS SECTIONS SHOWING THE GENERALIZED GEOLOGY OF THE UPPER DESCHUTES BASIN AND LOCATIONS OF SELECTED WELLS
 By Kenneth E. Lite Jr. and Marshall W. Gannett 2002

Base modified from U.S. Geological Survey data and other digital sources. See table of contents of printed report for detailed information on sources.