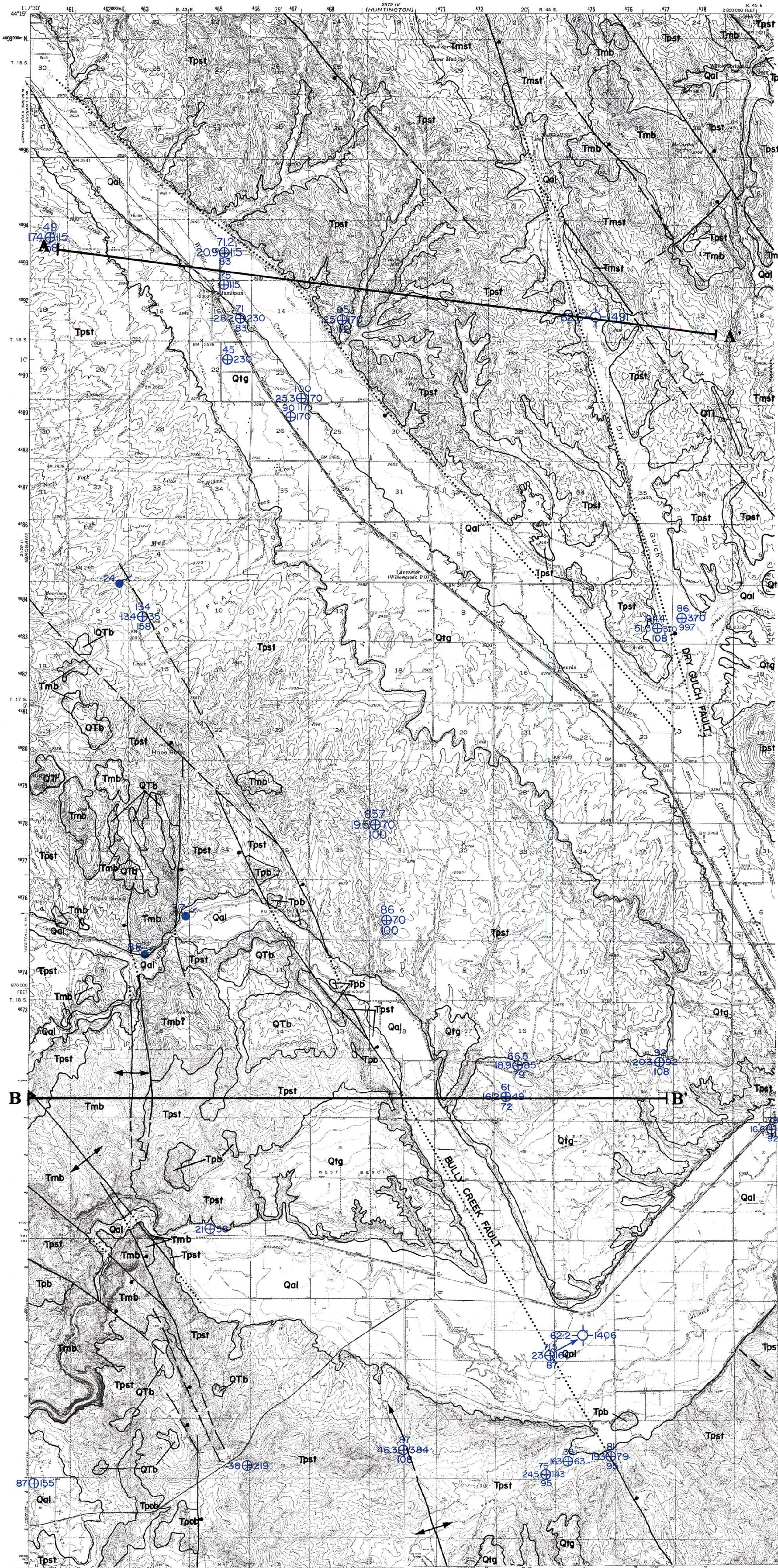
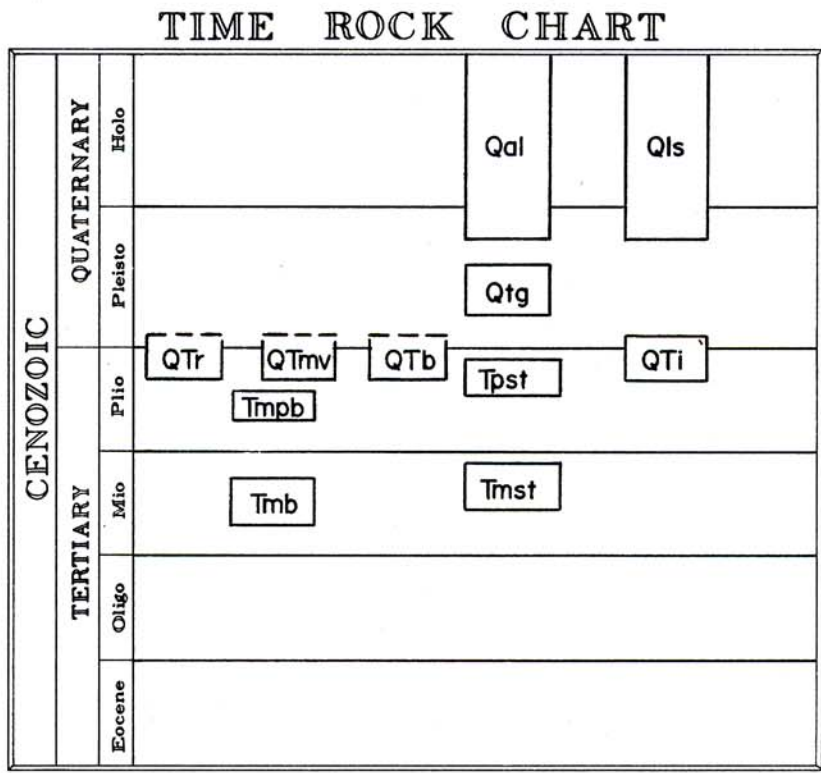


GENERALIZED GEOLOGIC MAP OF THE WESTERN SNAKE RIVER PLAIN, OREGON



Base Map from USGS



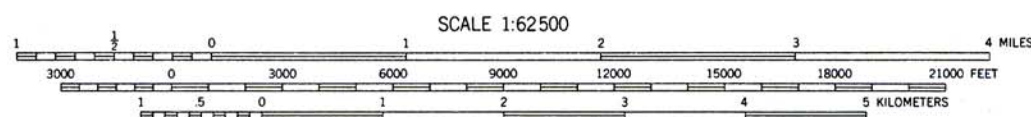
EXPLANATION

(Boundaries are approximate; statements are general)

- Qal Alluvium: Unconsolidated, locally stratified silt, sand, and gravel filling valley floors and stream channels
- Qls Landslide deposits
- Qtg Terrace gravels: Pleistocene(?), unconsolidated, locally stratified sand and gravel on elevated erosional benches along Willow Creek, Alkali Gulch, Bully Creek, and Malheur River
- Qtb Basalt: Pliocene to Pleistocene(?), gray to black, olivine-bearing basaltic and andesitic flows in area west of Bully Creek
- Qtmv Cinder cones: Pliocene to Pleistocene(?) cinder cones with related ash and breccia east of Vale along Malheur River. Similar age vents not differentiated in Bully Creek area are thought to be source for unit *Qtb*
- QTr Rhyolite of Sugarloaf Butte: Pliocene to Pleistocene(?) rhyolite forming butte west of head of Bully Creek; exact age relationship unknown
- QTI Basaltic dike: Upper Pliocene to Pleistocene(?), black, fine-grained basaltic dike north of Alkali Flats
- Tpst Pliocene tuffaceous sedimentary rocks: Pliocene, stratified, poorly indurated, tuffaceous siltstones, sandstones, and mudstones, with minor diatomite, airfall deposits, and mudflows. Unit *Tpb* mapped separately as intercalated olivine-bearing basalt flows. Unit is approximately equivalent to Chalk Butte formation, uppermost formation of Idaho Group of Calkins (1954), Carlat (1954), and Corcoran and others (1962)
- Tmpb Middle Pliocene basalt: Middle Pliocene, thin, olivine-bearing basaltic flows; found in extreme southwest corner of mapped area only. Unit is approximately equivalent to Grassy Mountain Basalt, middle member of Idaho Group of Corcoran and others (1962)
- Tmst Upper Miocene tuffaceous sediments: Upper Miocene, stratified, semi- to well-indurated, tuffaceous siltstones, sandstones, and mudstones, with some silicified arkosic sandstones and conglomerates occurring northeast of Dry Gulch and as erosional remnants above Vale. Approximately equivalent to Deer Butte Formation of Corcoran and others (1962)
- Tmb Middle Miocene basalt: Middle Miocene, olivine-bearing, massive to scoriaceous basaltic and andesitic flows, with minor interflow tuffs and sediments occurring west of Bully Creek and in northern portion of mapped area. Approximately equivalent to Owyhee Basalt of Corcoran and others (1962) and Columbia River Basalt of Calkins (1954) and Carlat (1954)

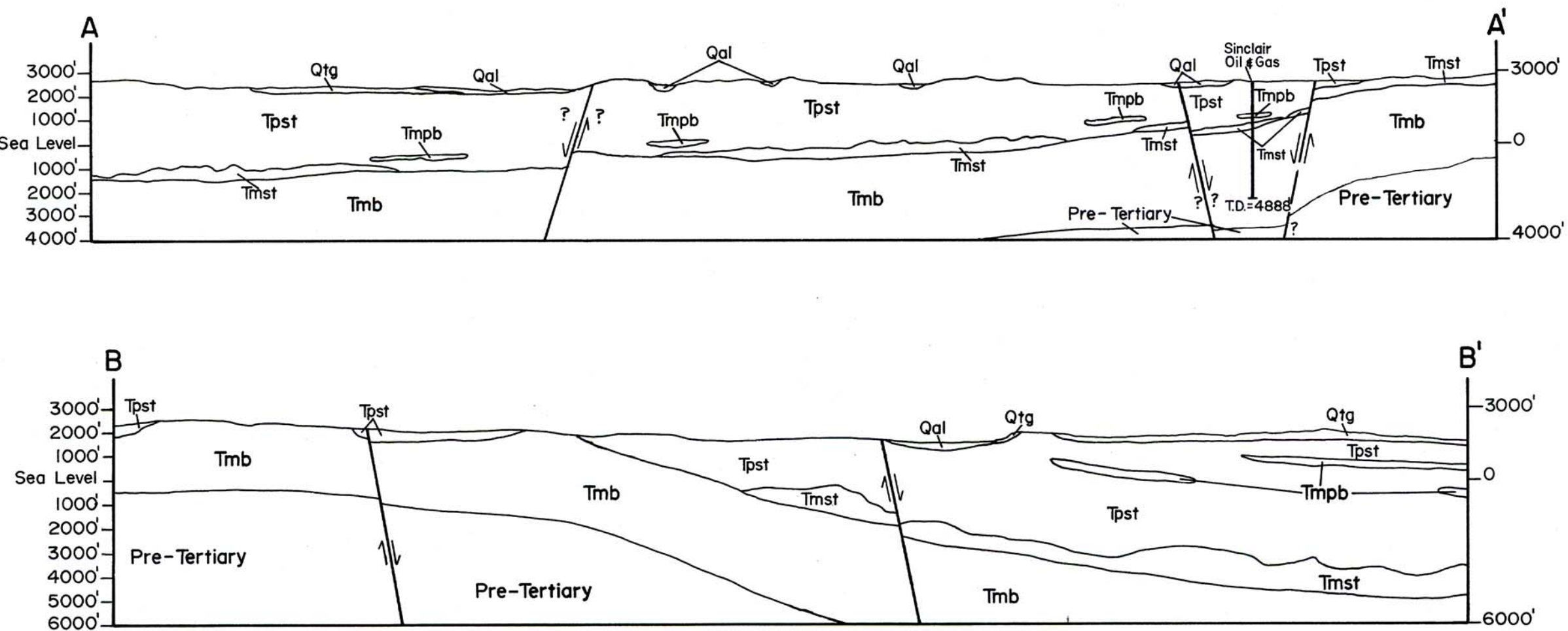
GEOLOGIC SYMBOLS

- Contact
- Normal fault — solid where exposed, dashed where inferred, dotted where concealed, ball and bar on downthrown side
- Anticline — arrow indicates plunge; dashed where inferred, dotted where concealed
- * Volcanic center
- GRADIENT (°C Km⁻¹)
- DEPTH PROBED (m)
- 22.1 ⊕ 150 HOLE LOCATION
- 83 HEAT FLOW (mWm⁻²)
- BOTTOM HOLE TEMP (°C)
- 38 ⊕ 600 FLOWING (WATER) GAS OR OIL WELL
- DEPTH OF WELL (m)
- WATER TEMP (°C)
- 38 THERMAL SPRING
- WATER TEMP (°C)



Geologic Cross Sections

Geologic compilation by David E. Brown, 1980. Adapted from Calkins, 1954; Carlat, 1954; Corcoran and others, 1962; Newton and Corcoran, 1963; Brooks, McIntyre, and Walker, 1976; Walker, 1977



Map prepared by
STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES