



### Eroded core of Brokeoff Volcano

View looking north from cliffs on east side of Mill Creek above Childs Meadows (along boundary of Lassen Peak and Reading Peak quadrangles). The andesites of Mill Canyon (unit amc, 590–470 ka) in the core of Brokeoff Volcano (including Diamond Peak and Mount Conard) consist of interbedded flows and breccias (many hydrothermally altered). The volcano is highly eroded by glacial, fluvial and landslide processes (the major landslide shown has a  $^{14}\text{C}$  date of  $3,310 \pm 55$  yr B.P.). Brokeoff Mountain, Mount Diller, and Pilot Pinnacle mark the resistant rim of the erosional amphitheater in Brokeoff Volcano. The cliffs on Brokeoff Mountain are the dacite of Twin Meadows (unit dt,  $470 \pm 10$  ka), the uppermost unit of the Mill Canyon sequence. Mount Diller and Pilot Pinnacle consist of the andesite of Mount Diller (unit amd,  $387 \pm 10$  ka), part of the Diller sequence. The andesite of Glassburner Meadows (unit ag,  $\sim 450$  ka) and the andesite of Bluff Falls quarry (unit abf,  $467 \pm 10$  ka) are also part of the Diller sequence. These units are overlain by the basaltic andesite of Huckleberry Lake (unit mhl,  $\sim 300$  ka), a regional calc-alkaline unit unrelated to Brokeoff Volcano. The dacite of Ski Heil Peak (unit ds,  $244 \pm 10$  ka) and the rhyodacite of Mount Conard (unit rmc,  $298 \pm 9$  ka) are part of the Bumpass sequence of the Lassen domefield. Upper Sulphur Works is the site of many acid fumaroles and represents major steam upflow from the vapor-dominated reservoir of the Lassen hydrothermal system (Muffler and others, 1982). The underlying hot-water reservoir flows south and is discharged in the near-neutral, chloride-bearing, silica-depositing springs of Growler Hot Spring and nearby Morgan Hot Springs.

*Photograph by Patrick Muffler.*