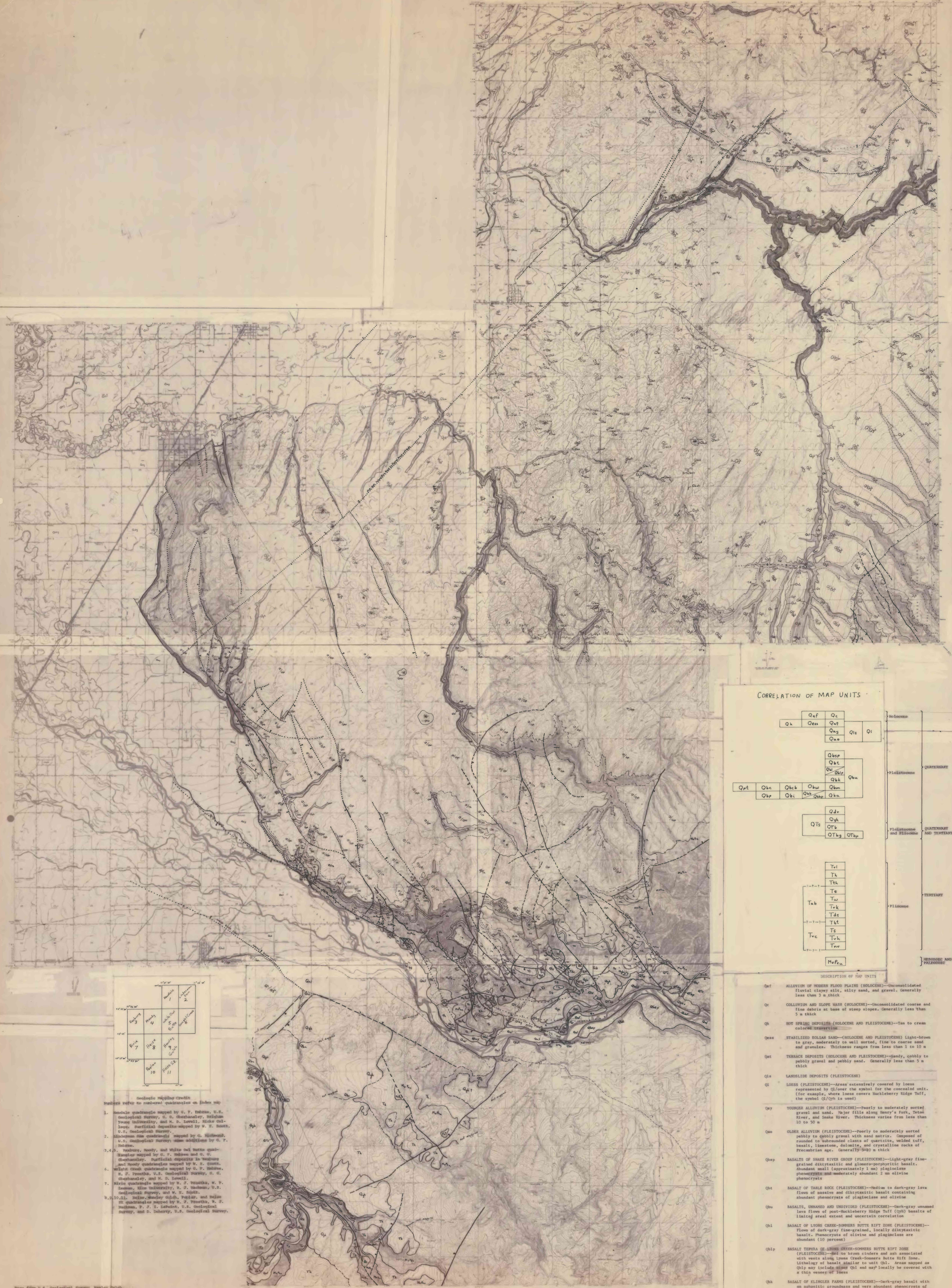
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

OPEN-FILE REPORT
78-1009
PLATE 1



Geologic Mapping Credit
Numbers refer to numbered quadrangles on index map

1. Newdale quadrangle mapped by G. F. Embree, U.S. Geological Survey, G. G. Eberhardsley, Brigham Young University, and M. D. Lovell, Ricks College. Surficial deposits mapped by W. E. Scott, U.S. Geological Survey.
2. Lidderman Dam quadrangle mapped by G. Richmond, U.S. Geological Survey; some additions by G. F. Embree.
3,4,5. Rexburg, Moody, and White Owl Butte quadrangles mapped by G. F. Embree and G. G. Eberhardsley. Surficial deposits in Rexburg and Moody quadrangles mapped by W. E. Scott.
6. Wright Creek quadrangle mapped by G. F. Embree, H. J. Prostka, U.S. Geological Survey, G. G. Eberhardsley, and M. D. Lovell.
7. Ririe quadrangle mapped by H. J. Prostka, M. P. Leeman, Rice University, R. J. Hackman, U.S. Geological Survey, and W. E. Scott.
8,9,10,11. Heise, Hawley Gulch, Poplar, and Heise SE quadrangles mapped by H. J. Prostka, R. J. Hackman, P. J. I. LaPoint, U.S. Geological Survey, and D. Doherty, U.S. Geological Survey.

Base from U.S. Geological Survey, Hawley Gulch, 1951, Heise, 1951, Heise SE, 1951, Lidderman Dam, 1965, Moody, 1951, Newdale, 1949, Poplar, 1951, Rexburg, 1949, Ririe, 1950, White Owl Butte, 1951, and Wright Creek, 1965, 1:24,000.

SCALE 1:48 000
1 0 1 2 3 MILES
1 0 1 2 3 KILOMETERS

PLATE 1.--GEOLOGIC MAP OF THE REXBURG AREA, EASTERN IDAHO

CORRELATION OF MAP UNITS

DESCRIPTION OF MAP UNITS

Qaf ALLUVIUM OF MODERN FLOOD PLAINS (HOLOCENE)--Unconsolidated fluvial clayey silt, silty sand, and gravel. Generally less than 3 m thick

Qc COLLUVIUM AND SLOPE WASH (HOLOCENE)--Unconsolidated coarse and fine debris at base of steep slopes. Generally less than 5 m thick

Qh HOT SPRING DEPOSITS (HOLOCENE AND PLEISTOCENE)--Tan to cream colored travertine

Qess STABILIZED EOLIAN SAND--(HOLOCENE AND PLEISTOCENE) Light-brown to gray, moderately to well sorted, fine to coarse sand and granules. Thickness ranges from less than 1 to 10 m

Qat TERRACE DEPOSITS (HOLOCENE AND PLEISTOCENE)--Sandy, cobbly to pebbly gravel and pebbly sand. Generally less than 5 m thick

Qls LANDSLIDE DEPOSITS (PLEISTOCENE)

Ql LOESS (PLEISTOCENE)--Areas extensively covered by loess represented by Ql/over the symbol for the concealed unit. (for example, where loess covers Huckleberry Ridge Tuff, the symbol Ql/Qyh is used)

Qay YOUNGER ALLUVIUM (PLEISTOCENE)--Poorly to moderately sorted gravel and sand. Major fills along Henry's Fork, Teton River, and Snake River. Thickness varies from less than 10 to 50 m

Qao OLDER ALLUVIUM (PLEISTOCENE)--Poorly to moderately sorted pebbly to cobbly gravel with sand matrix. Composed of rounded to subrounded clasts of quartzite, welded tuff, basalt, limestone, dolomite, and crystalline rocks of Precambrian age. Generally 5-10 m thick

Qbsp BASALTS OF SNAKE RIVER GROUP (PLEISTOCENE)--Light-gray fine-grained diktytaxitic and glomero-porphyritic basalt. Abundant small (approximately 1 mm) plagioclase phenocrysts and moderately abundant 2 mm olivine phenocrysts

Qbt BASALT OF TABLE ROCK (PLEISTOCENE)--Medium to dark-gray lava flows of massive and diktytaxitic basalt containing abundant phenocrysts of plagioclase and olivine

Qbu BASALTS, UNNAMED AND UNDIVIDED (PLEISTOCENE)--Dark-gray unnamed lava flows of post-Huckleberry Ridge Tuff (Qyh) basalts of limited areal extent and uncertain correlation

Qbl BASALT OF LYONS CREEK-SOMMERS BUTTE RIFT ZONE (PLEISTOCENE)--Flows of dark-gray fine-grained, locally diktytaxitic basalt. Phenocrysts of olivine and plagioclase are abundant (10 percent)

Qblp BASALT TEPHRA OF LYONS CREEK-SOMMERS BUTTE RIFT ZONE (PLEISTOCENE)--Red to brown cinders and ash associated with vents along Lyons Creek-Sommers Butte Rift Zone. Lithology of basalt similar to unit Qbl. Areas mapped as Qblp may include minor Qbl and may locally be covered with a thin veneer of loess

Qbk BASALT OF KLINGLER FARMS (PLEISTOCENE)--Dark-gray basalt with an aphanitic groundmass and very abundant phenocrysts of plagioclase (2 mm to greater than 2 cm)

Qpt PALAGONITIC TEPHRA (PLEISTOCENE)--Brown, moderately consolidated palagonitic tuff and cinders

Qbc BASALT OF CANYON CREEK (PLEISTOCENE)-- Medium- to dark-gray aphanitic to fine-grained diktytaxitic basalt lacking in phenocrysts

Qbcl BASALT OF CANYON CREEK BUTTE (PLEISTOCENE)--Dark-gray fine-grained diktytaxitic basalt with phenocrysts of plagioclase and olivine (1-3 mm) composing 5-10 percent of the rock

Qbw BASALT OF WHITE OWL BUTTE (PLEISTOCENE) Medium- to dark-gray aphanitic to fine-grained, locally diktytaxitic basalt with olivine and plagioclase phenocrysts. Phenocrysts are 1-2 mm in size and comprise 10 percent of the rock

Qbm BASALT OF MOODY CREEK (PLEISTOCENE)--Medium-gray fine-grained locally diktytaxitic basalt. Very sparse (much less than 1 percent) phenocrysts of plagioclase as much as 5 cm or more in length. Three flows of basalt, each with well developed pillow structure at the base, are exposed on the southern wall of the canyon of Teton River (Sec. 25, T. 7 N., R. 41 E.)

Qbp BASALT OF PINE CREEK (PLEISTOCENE)--Dark-gray columnar-jointed lava flows of massive and diktytaxitic basalt

Qbi BASALT OF IONA (PLEISTOCENE)--Dark-gray coarsely diktytaxitic basalt flows with conspicuous large plagioclase phenocrysts

Qbb BASALT OF BITTERS BUTTE (PLEISTOCENE)--Basalt lithologically identical to unit Qbl, but extruded from Bitters Butte vent

Qbbp BASALT TEPHRA OF BITTERS BUTTE (PLEISTOCENE)--Identical to unit Qblp but associated with the Bitters Butte vent

Qbs BASALT OF ARD FARMS (PLEISTOCENE)--Dark-gray aphanitic to fine-grained basalt with extremely sparse small (less than 2 mm) plagioclase phenocrysts

Qdr RHYOLITE DIKES (PLEISTOCENE)--Black to light-gray perlitic rhyolite vitrophyre. Sanidine and quartz are abundant phenocrysts, plagioclase and pyroxene are much less common. Total phenocryst content is 20-25 percent. Minor flow banding generally is present

QTs TUFFACEOUS SEDIMENTS, UNNAMED (PLEISTOCENE AND PLIOCENE)--Light-gray, yellow, poorly consolidated diatomite, tuffaceous sandstone, siltstone, and conglomerate locally containing brown and yellowish-brown basaltic tuff. Maximum exposed thickness 100 m

Qyh HUCKLEBERRY RIDGE TUFF (PLEISTOCENE)--Compound cooling unit of crystal-rich welded rhyolitic ash-flow tuff. Major phenocrysts are sanidine and quartz; plagioclase and pyroxene are much more sparse. Phenocrysts are quite abundant (20-30 percent) in lower part of unit and become smaller and less numerous (less than 5 percent) near the top. A black basal vitrophyre is exposed locally in the Teton River Canyon; above this the major part of the unit is composed of light-gray to grayish-pink densely welded devitrified tuff with well-developed eutaxitic texture. Maximum exposed thickness is approximately 100 m. Locally a thin (less than 3 m) sheet of orange crystal-rich welded ash-flow tuff overlies the main sheet of Qyh which is distinguished from the main sheet by its lack of devitrification, presence of fresh nonflattened white and pink pumices, and distinctive black glass shards in an orange matrix. The Huckleberry Ridge Tuff is K-Ar dated as 2 m.y. (Christiansen and Blank, 1972, p. B5).

QTb PRE-HUCKLEBERRY RIDGE TUFF BASALTS UNDIVIDED (PLEISTOCENE AND PLIOCENE)--Dark-gray columnar-jointed lava flows of massive and diktytaxitic basalt containing phenocrysts of plagioclase and olivine. Maximum exposed thickness 80 m

QTbg BASALT OF GOE FLAT (PLEISTOCENE AND PLIOCENE)--Basalt tephra and lava flows; lava flows are dark-gray, massive, and diktytaxitic basalt containing abundant phenocrysts of plagioclase and olivine. The tephra, forming the bulk of the unit, is well-bedded basaltic tuff, with about 15 percent yellow-brown palagonite. Fractured pebbles of quartzite, chert, and limestone occur in the coarser layers. Maximum exposed thickness 170 m

QTbp BASALT TEPHRA OF GOE FLAT (PLEISTOCENE AND PLIOCENE)--Gray brown, and orange lapilli and ash, associated and interbedded with unit QTbg

Tvl RHYOLITE OF LONG HOLLOW (PLIOCENE)--Red and black perlitic rhyolite vitrophyre. Phenocrysts of sanidine, quartz, plagioclase, and pyroxene constitute 10-30 percent of the rock. Local zones of flow breccia consist of black clasts in red matrix. Flow banding and zones of lithophysae are most commonly oriented near-vertical. In local zones and especially near the top of the flow the rhyolite grades into a pink tuff with black shards and vitrophyre clasts. In some exposures, the rhyolite is devitrified and shows highly contorted white and dark-gray flow banding. Maximum exposed thickness 140 m

Th TUFF OF HEISE (PLIOCENE)--A compound cooling unit consisting of at least four sheets of rhyolitic welded ash-flow tuff, each containing different percentages of flattened pumice and phenocrysts of sanidine, quartz, plagioclase, and minor pyroxene. The uppermost sheet, Th_3, (formerly "Heise D") is orange and reddish-brown, crystal-poor, vitric, welded ash-flow tuff that is thin and of limited and irregular distribution. Th_2 (formerly "Heise C_2") is dark-gray, moderately collapsed, highly porous, glassy, and divitrified ash-flow tuff containing 5-10 percent phenocrysts. Th_1 (formerly Heise C_2) is gray, pink, lavender, and brown, densely welded and devitrified ash-flow tuff containing very sparse pumice and phenocrysts. It commonly contains abundant lithophysae giving it a "swiss-cheese" appearance. The lowermost sheet, Th_1, (formerly "Heise C_1") is gray, lavender, and brown; densely welded and devitrified except for a basal vitrophyre as much as 1 m thick. Highly flattened and stretched pumice fragments, both light-gray and dark reddish-brown and as much as 1 m long, are most abundant in the middle and lower parts of the sheet. At the top of the sheet, a zone of welding reversal and in some places a poorly-developed vitrophyre marks the transition into the overlying sheet (Th_2). Generally, Th_1 and Th_2 comprise the main thickness of the unit, capped by the thin and irregularly overlapping upper sheets. Total thickness of unit 10-170 m

Tvh TUFF OF HAWLEY GULCH (PLIOCENE)--Poorly exposed light- to medium-gray, yellow, and pink, non-welded, prominently bedded airfall and ash-flow deposits consisting mainly of coarse long-tube rhyolitic pumice and ash. Thickness ranges from 0 to more than 140 m

Tab ANDESITE OF BIG HOLE MOUNTAINS (PLIOCENE)--Lava flows of dark-gray to black, dense to glassy, highly fractured, platy-jointed andesite or basalt containing sparse plagioclase phenocrysts. Thickness 0-70 m

Te TUFF OF ELKHORN SPRING (formerly "Heise B") (PLIOCENE)--Cliff-forming gray, purple, and pink, very densely welded crystal-poor rhyolitic welded ash-flow tuff with a prominent basal vitrophyre as much as 2 m thick. Most of sheet is devitrified, lithophysal, platy-jointed, and contains small highly-flattened recrystallized pumice. Thickness 0-210 m

Tw TUFF OF WOLVERINE CREEK (PLIOCENE)--Poorly resistant, mostly light to dark-gray and yellowish-gray non-welded and partially welded, crystal-poor rhyolitic ash-flow and airfall tuffs containing light-gray, non-flattened pumice fragments and black obsidian chips. Upper part of unit, known informally as "Rainbow Tuff," is partially welded ash-flow tuff, commonly stained bright shades of red, orange, and purple. Middle part of unit is a thick single ash-flow cooling unit, light-gray in color, known informally as "Wave Tuff." Lower part of unit is non-welded, bedded airfall tuff that may be distal unit Tts. Thickness 0-60 m

Tvk RHYOLITE OF KELLY CANYON (PLIOCENE)--Rhyolitic lava flows and flow breccias; crystal-poor, prominently flow banded, mostly highly fractured, gray, brown, purple, and pink devitrified rhyolite with delicate flow banding and a variety of rhyolite breccias. About 10 percent of unit is black vitrophyre and light-gray perlitic vitrophyre occurring as a chilled margin at the base and top of the unit, and as lenticular layers throughout. Thickness 0-340 m

Tds TUFF OF DORA SPRINGS (PLIOCENE)--Poorly to moderately resistant, light- to medium-gray and yellowish-gray basaltic tuff containing abundant scoriaceous lapilli and rare fragments of Paleozoic and Mesozoic sedimentary rocks. Overlain by laminated tuffaceous siltstone. Thickness 0-70 m

Tbt BASALT OF TABLE ROCK CANYON (PLIOCENE)--Lava flows and breccias of dense fine-grained basalt; medium to dark gray where fresh, shades of red, orange, and yellow where fractured and altered. Thickness more than 50 m

Trc RHYOLITE OF CARLTON CREEK (PLIOCENE)--Gray, pink, lavender, and brown rhyolitic lava flows and flow breccias; some flows are crystal poor and others relatively crystal rich. Thickness ranges from 0 to more than 200 m

Ts TUFF OF SPRING CREEK (formerly "Heise A") (PLIOCENE)--Brown, orange, pink, and purple, mostly devitrified densely welded ash-flow tuff containing about 10-20 percent small phenocrysts of quartz, feldspar, and minor hornblende(?), and abundant, small, very flattened pumices. Perlitic basal vitrophyre generally present as well as several discontinuous lithophysal zones. Thickness 0-80 m

Trh RHYOLITE OF HAWLEY SPRING (PLIOCENE)--Medium- to light-brown, grey, and lavender, mostly devitrified rhyolitic lava flow containing abundant large phenocrysts of quartz, feldspar, and minor biotite and hornblende. Commonly altered to shades of red, orange, and yellow along fault zones. Thickness 0-140 m

Tmr TUFF OF NEMBY RANCH (PLIOCENE)--Poorly resistant light-gray and yellowish-gray finely laminated and blocky fine-grained airfall and waterlaid rhyolitic tuff, locally containing snail and reed impressions. May be correlative with lower part of unit Tts. Thickness 0-70 m

MzPzu MESOZOIC AND PALEOZOIC ROCKS, UNDIVIDED--Highly indurated, variably deformed and recrystallized sedimentary strata of Cambrian through Cretaceous age; includes limestone, dolomite, sandstone, shale, conglomerate, chert, and minor coal and phosphate rock

CONTACT--Dashed where approximately located; dotted where concealed

FAULTS
Normal--Dashed where approximately located; dotted where concealed; queried where questionable. Bar and ball on downthrown side
Lateral--Arrows show directions of relative movement. Dashed where approximately located; dotted where concealed; queried where questionable
ANTICLINE--Showing trace of axial plane. Dashed where approximately located; dotted where concealed
MONOCLINE--Showing trace of axial plane and direction of dip. Dashed where approximately located; dotted where concealed

BASALTIC ERUPTIVE VENT