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UTAH GEOLOGICAL AND MINERAL SURVEY

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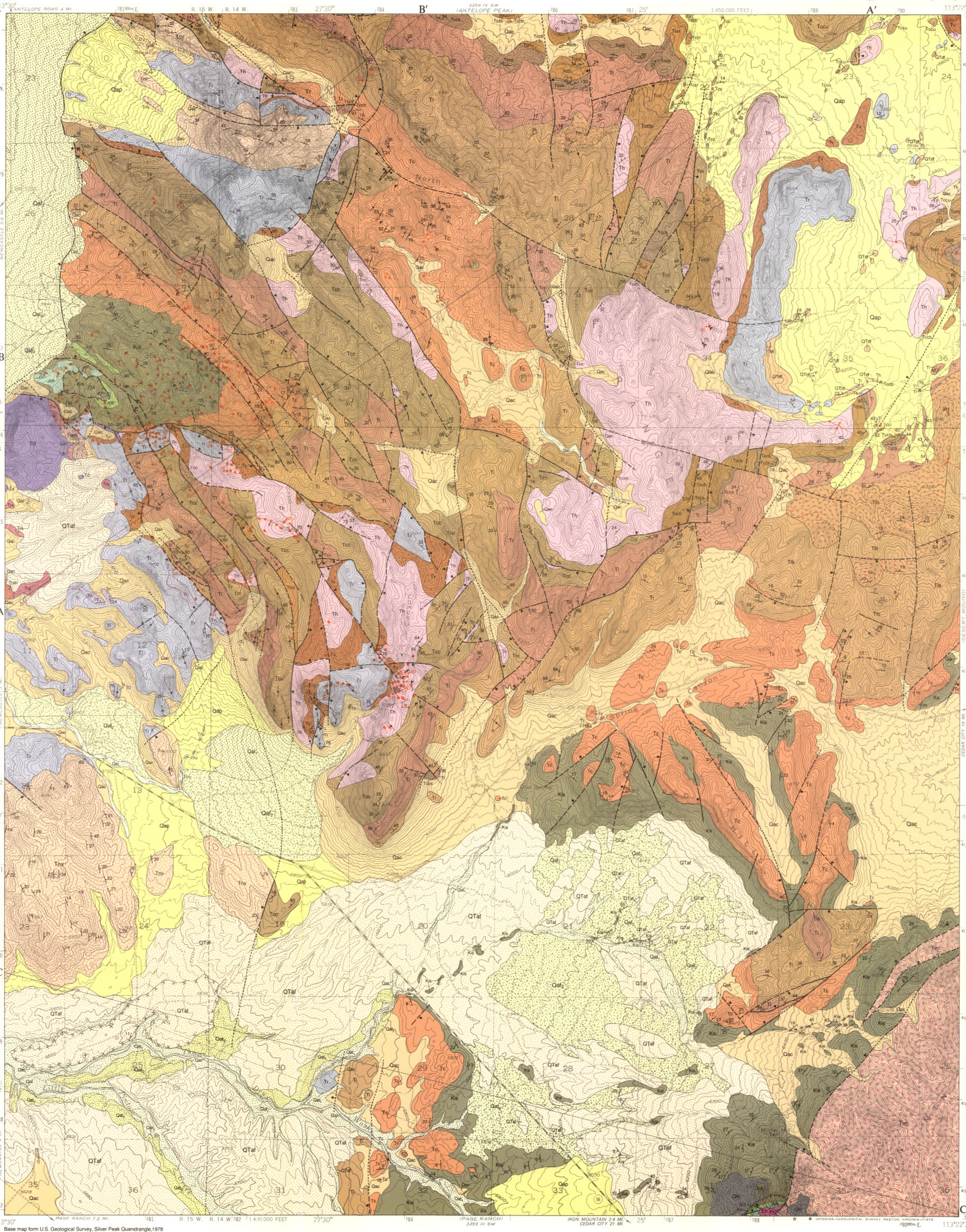
Plate 1
Utah Geological and Mineral Survey Map 108
Geology of the Silver Peak Quadrangle



Base map form U.S. Geological Survey, Silver Peak Quandrangle,1978

Field mapping by authors 1985-86
Kent D. Brown, Cartographer

SCALE 1:24 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

GN MN
1°29′ 26 MILS
15° 267 MILS

UTM GRID AND 1978 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

UTAH

QUADRANGLE LOCATION

GEOLOGIC MAP OF THE SILVER PEAK QUADRANGLE, IRON COUNTY, UTAH

by
Michael A. Shubat and Mary A. Siders
Utah Geological and Mineral Survey

1988

CONTACT

Dashed where approximate; dotted where inferred

FAULTS

Dashed where approximate; queried where uncertain; dotted where covered

Normal Fault

Bar and ball on downthrown side; dip indicated by arrow

Inferred Thrust Fault (on cross sections)

Gravity Slide Block Dashed where inferred

TRACE OF AXIAL SURFACE OF FOLD

Anticline — Syncline

Outline of the oldest and highest alluvial terrace, T3. This is a cut terrace without associated sediments.

STRIKE AND DIP OF BEDDING AND ASH-FLOW TUFF LAYERING

Inclined — Vertical

STRIKE AND DIP OF JOINTS

Inclined — Vertical

STRIKE AND DIP OF SLICKENSIDES

Inclined; approximate plunge of grooves indicated

Horizontal; dip of surface indicated

VEIN

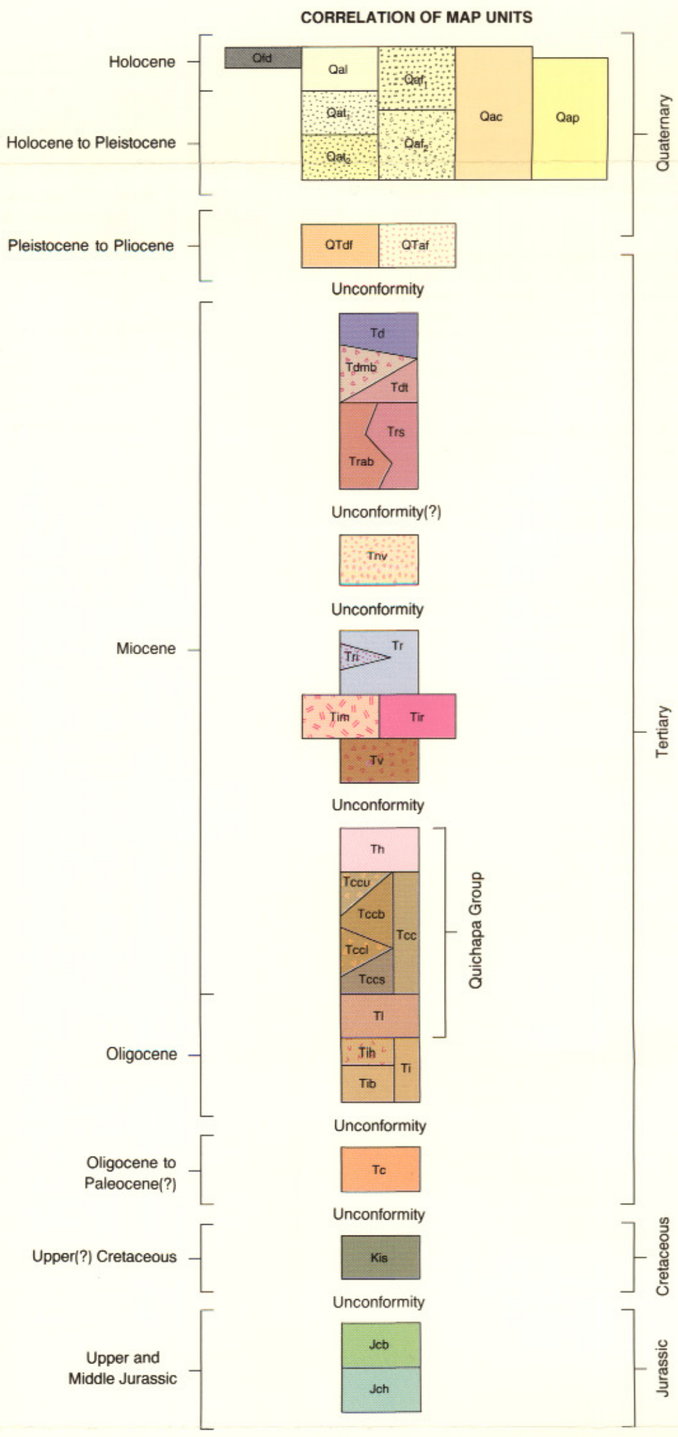
Dip indicated by arrow

MINE WORKINGS

adit shaft prospect trench

Margin of open pit (Burke mine)

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

Qfd — Mine dump fill—*Mine dump fill flanking the northern pit of the Burke mine.*

Qal — Modern alluvium—*Unconsolidated sand and gravel deposited in intermittent stream channels.*

Qaf_1 — Young terrace deposits—*Unconsolidated sand, silt, and minor gravel deposits forming the lowest and youngest terraces along Dry Wash and Little Pinto Creek. Material dominantly composed of orangish silt and sand.*

Qaf_2 — Terrace deposits—*Unconsolidated sand, silt, and minor gravel deposits forming fill terraces of intermediate age and elevation. Material dominantly composed of orangish silt and sand.*

Qaf — Modern alluvial-fan deposits—*Unconsolidated sands and gravel deposited on active alluvial fans. Fans of this age postdate Quaternary faulting along the west margin of the Antelope Range.*

Qaf_3 — Alluvial-fan deposits—*Unconsolidated sand and gravel deposited in abandoned alluvial fans. Fans of this age are slightly dissected and partially covered by Qaf, deposits. This unit is cut by Quaternary faulting along the west margin of the Antelope Range.*

Qac — Colluvial deposits—*Unconsolidated deposits of silt, sand, pebbles, and cobbles flanking steep areas of bedrock exposure and mantling lower slopes.*

Qap — Pediment alluvium—*Unconsolidated deposits of sand, silt, and gravel forming a thin cover over bedrock. Outcrops common in stream cuts.*

QTaf — Older alluvial-fan deposits—*Poorly consolidated deposits of silt, sand, gravel, and boulders covering a large area in the southwest corner of the quadrangle. Characterized by well-developed whaleback landforms, a thick (as much as 6 inches) calcrete horizon, and the presence of conspicuous magnetite cobbles derived from the periphery of the Iron Mountain pluton.*

QTdf — Debris flows—*Poorly consolidated deposits of pebble or boulder conglomerate and lesser coarse sandstone. Clasts composed mostly of Racer Canyon Tuff and Harmony Hills Tuff. Deposited as debris flows with intercalated alluvium.*

Td — Dacite of Bullion Canyon—*Purplish dacite porphyry with coarse (7 to 12 mm), abundant phenocrysts of quartz, sanidine, plagioclase, biotite, and opaques. Diktytaxitic texture represented by abundant, fine-grained, uniformly distributed void space. It forms a well-defined dome located in the southwest portion of the map area. Dome is about 3000 feet (900 m) in diameter with concentric, steeply dipping flow banding. Dated at 8.5±0.4 Ma.*

Tdt — Dacitic air-fall tuff—*Air-fall tuff facies of the dacite of Bullion Canyon that locally underlies the dacite dome.*

Tdmb — Dacitic mudflow breccia—*Mudflow breccia facies of the dacite of Bullion Canyon that locally underlies the dacite dome.*

Trs — Rhyolite of Silver Peak—*Purplish-gray rhyolite to trachyte porphyry flow rocks with glassy matrix and medium-grained (3 mm) phenocrysts of quartz, sanidine, biotite, and trace opaques. Irregular vesicles (5 mm in diameter) comprise up to 17 percent of the rock. Consists of several coalescing volcanic domes located in the west-central portion of the map area. Dated at 8.4±0.4 Ma.*

Trab — Autobrecciated rhyolite—*Autobrecciated facies of the rhyolite of Silver Peak.*

Tnv — Volcaniclastic rocks of Newcastle Reservoir—*Brick-red, moderately well-bedded volcaniclastic conglomerate and sandstone. Clasts composed of Racer Canyon Tuff, Harmony Hills Tuff, a variety of volcanic rocks, and lesser limestone, chert, and quartzite. Hematitic matrix is ubiquitous. Complete section not observed, but exposed thicknesses range from 300 to 1200 feet (90 to 365 m). Equivalent to the "mine series" of Siders (1985a).*

Tr — Racer Canyon Tuff—*Weakly to moderately welded, rhyolitic ash-flow tuff of whitish, gray, or pink color. Contains 30 to 35 percent crystals of quartz, plagioclase, sanidine, biotite, and minor Fe-Ti oxides, hornblende, and sphene. Lithic fragments are sparse. Thickness ranges from 300 to 1100 feet (90 to 335 m). Dated about 19 Ma.*

Tri — Interbedded tuffaceous sandstone of the Racer Canyon Tuff— *Bedded quartz-rich tuffaceous sandstone that locally occurs near the top of the Racer Canyon Tuff and presumably separates two cooling units.*

Tir — Replacement deposits of iron ore—*Massive bodies of iron ore composed of magnetite and hematite. Deposits formed by replacement of the Homestake Limestone Member of the Carmel Formation and the Iron Springs Formation. Replacement bodies mapped in two areas adjacent to the Iron Mountain pluton.*

Tim — Iron Mountain pluton—*Porphyritic quartz monzonite composed of about 50 percent phenocrysts of plagioclase, clinopyroxene, amphibole, and biotite set in a fine-grained granitoid to granophyric matrix. Top of pluton is concordant with the base of the Carmel Formation. Exposed contacts appear to be intrusive faults. Dated at approximately 20 Ma.*

Tv — Volcaniclastic rocks—*Dark-colored, poorly-sorted, crudely bedded, cobble-rich, volcaniclastic mudflow breccia with local sandstone interbeds. Clasts composed dominantly of andesite and Harmony Hills Tuff. Unit is widely distributed and about 100 feet (30 m) thick.*

Th — Harmony Hills Tuff—*Purplish, red, or brown (where altered) to light tan (where fresh), moderately welded, dacitic, crystal-rich ash-flow tuff. Contains about 50 percent crystals of plagioclase, quartz, biotite, amphibole, and Fe-Ti oxides. Thickness ranges from 200 to 400 feet (60 to 120 m). Dated at about 21 Ma.*

Condor Canyon Formation

Tcc — Condor Canyon Formation—*Individual members mapped outside of the Antelope Range mining district but undifferentiated within the district.*

Tccu — Upper volcaniclastic and tuffaceous rocks—*Over 200 feet (60 m) of volcaniclastic and tuffaceous rocks cap the Condor Canyon Formation in the northwest corner of the quadrangle. Four volcaniclastic horizons were identified (from top to bottom): coarse andesitic mudflow breccia, lithic-rich volcaniclastic rock containing about 90 percent Bauers Tuff clasts in a pale gray matrix, volcaniclastic rock containing 30 to 40 percent Bauers Tuff clasts and 15 percent crystals of plagioclase, biotite and trace quartz, and a white, non-welded, porous, massive, lithic-crystal tuff.*

Tccb — Bauers Tuff Member—*Densely welded, rhyolitic, vitric-crystal ash-flow tuff with abundant, distinctive, light-gray flattened lenticules. Contains about 15 percent crystals of plagioclase, sanidine, bronze biotite, and minor Fe-Ti oxides. Black basal vitrophyre commonly present. Thickness ranges from 200 to 600 feet (60 to 180 m). Dated at 23 Ma.*

Tccl — Lower volcaniclastic rocks—*Andesitic volcaniclastic horizon separating the Bauers and Swett Tuff Members throughout most of the quadrangle. Consists of volcanic mudflow breccia containing pebble- to boulder-sized clasts of andesite. Approximately 30 to 70 feet (9 to 20 m) thick.*

Tccs — Swett Tuff Member—*Densely welded, rhyodacitic, vitric-crystal ash-flow tuff, with flattened lenticules. Contains about 15 percent crystals of plagioclase, biotite, and minor Fe-Ti oxides. Black basal vitrophyre commonly present. Thickness is less than 100 feet (30 m). Dated at 24 Ma.*

Tl — Leach Canyon Tuff—*Pale cream to gray, moderately welded, ash-flow tuff containing 20 to 30 percent crystals of quartz, plagioclase, sanidine, and minor biotite and opaques. Contains conspicuous reddish lithic fragments. Table Butte and Narrows Members not distinguished. Thickness is about 500 feet (150 m). Dated at about 25 Ma.*

Isom Formation

Ti — Isom Formation—*Dark-brown, densely welded, crystal-poor ash-flow tuff with distinctive, flattened, light-gray lenticules. Sparse crystals of plagioclase, minor clinopyroxene and Fe-Ti oxides. Mapped as a single unit in the Antelope Range district and as two members (below) outside of the district. Total thickness ranges from 300 to 1200 feet (90 to 365 m).*

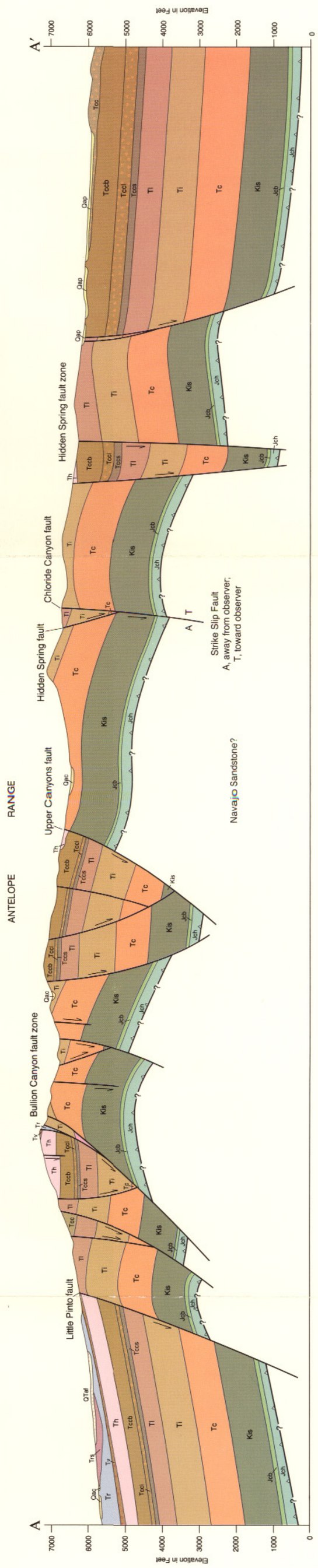
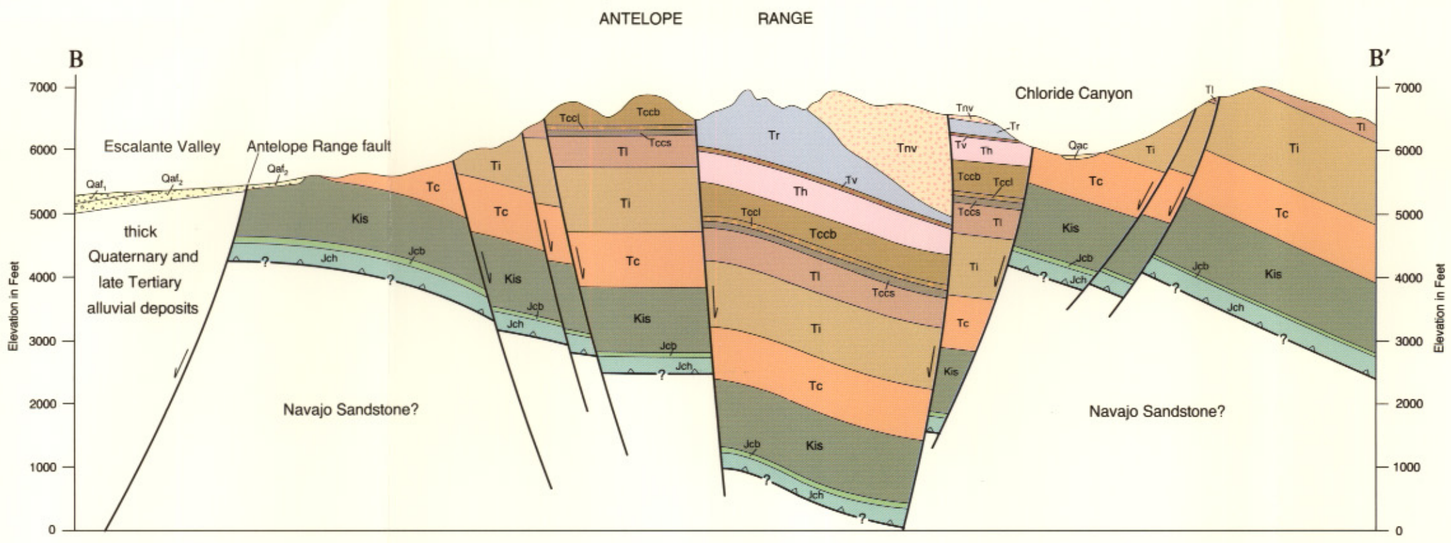
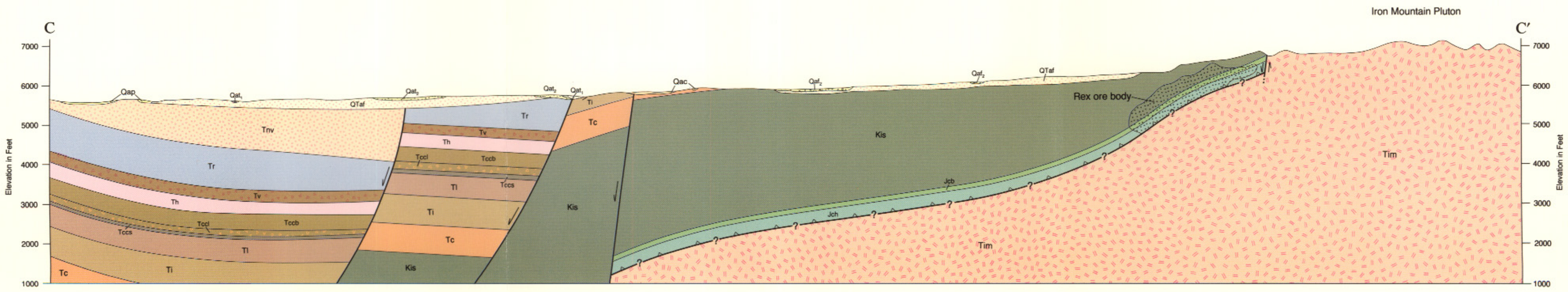
Tih — Hole-In-The-Wall Tuff Member—*Densely welded, purplish-gray to reddish, crystal-poor ash-flow tuff. Contains light gray, flattened lenticules and locally has a black basal vitrophyre.*

Tib — Baldhills Tuff Member—*Several cooling units of densely welded, brown, crystal-poor ash-flow tuff. Contains flattened vesicles, light gray lenticules, and rare, thin sedimentary interbeds. Black basal vitrophyres rarely exposed.*

Tc — Claron Formation—*Composed of fluvial and lacustrine shale, siltstone, sandstone, limestone, and conglomerate. Lower portion dominated by red siltstone, sandstone, and conglomerate. Upper portion is mostly light-gray to mottled, freshwater limestone (with sparse leaf fossils), limestone-clast conglomerate, and lesser sandstone. Thickness ranges from 500 to 950 feet (150 to 290 m).*

Kis — Iron Springs Formation—*Fluvial and lacustrine, light- to dark-brown, thin- to thick-bedded, continental sandstone and pebble- to cobble-conglomerate, with lesser interbedded siltstone, shale, and limestone. Base of unit includes a thin, discontinuous, basal conglomerate containing abundant quartzite clasts. Thickness ranges from about 1050 to 3600 feet (320 to 1100 m).*

Carmel Formation

Jcb — Upper banded member—*Alternating bands of gray and maroon shale and siltstone. Between 0 and 100 feet (0 to 30 m) thick.*

Jch — Homestake Limestone Member—*Resistant, massive to thick-bedded, blue-gray limestone containing sparse invertebrate fossils. Upper portion is a thin-bedded, argillaceous limestone. Base is not exposed in the quadrangle. A minimum thickness of 160 feet (50 m) is indicated.*