UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

GEOLOGIC MAP OF THE YERINGTON QUADRANGLE, NEVADA

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DESCRIPTION OF MAP UNITS

af ARTIFICIAL FILL--Mainly mine dumps and mill trailings. Boulder- to clay-size fragments of fractured, crushed and pulverized rock dumped in large spoil piles and tailings ponds. Large dumps of mining waste in the quadrangle occur at the Yerington copper mine on the east flank of the Singatse Range

Qf_3 YOUNG ALLUVIAL FAN DEPOSITS--Poorly sorted deposits of boulders, cobbles, gravel, sand, and silt. Clast size generally decreases and sorting generally improves downfan toward distal margins. Includes some fine-grained basin-fill deposits where distal fan limits are gradational and poorly defined. Fan surfaces are undissected to slightly dissected with few, if any, well-defined drainage channels. Constructional surfaces are generally unweathered with very weak, if any, soil development. Drainage is distributary, radiating from the fan apex. Occurs extensively throughout the quadrangle. Dominates the piedmont along the east flank of the Singatse Range and the large alluvial slope at the south end of Mason Valley

Qf_{3-2} YOUNG AND INTERMEDIATE ALLUVIAL FAN DEPOSITS, UNDIFFERENTIATED--Lithologically and texturally similar to young alluvial fan deposits. Morphologically intermediate and gradational between young and intermediate alluvial fan deposits. Includes areas where young and intermediate age fan surfaces are too complexly interrelated to be mapped separately or where age relations are uncertain

Qfp FLOOD-PLAIN ALLUVIUM--Moderately to poorly sorted sandy gravel, gravelly sand, sand, and sandy silt. Channel and overbank deposits along low-grandient streams. Limited to flood plain of East and West Walker Rivers

Qbf BASIN FILL DEPOSITS--Undifferentiated eolian, lacustrine, flood-plain and distal alluvial fan deposits. Mostly medium to fine grained sand, silt and clay with some interbedded coarser sand and gravel. Forms the broad, gently northward sloping lacustrine alluvial plain of Mason Valley between the distal fringes of alluvial fans and the margins of the Walker River flood-plain. Contacts between basin-fill deposits and distal alluvial fan deposits, flood-plain deposits, lacustrine deposits or sand sheets are typically gradational and poorly defined

Qes EOLIAN SAND DEPOSITS--Well to moderately well sorted sand and silt. Occurs as thin sand sheets that veneer other surficial deposits and bedrock on the piedmont east and northeast of Mason Valley. Largely derived from the lacustrine-alluvial plain of Mason Valley. Symbols for units veneered by eolian sand sheets are shown in parentheses. Thickness 0 to 5 m

Qls LANDSLIDE DEPOSITS--Chaotic masses of unsorted angular boulder- to clay-size debris. Includes some talus and colluvium where these materials overlap or are intermixed with landslide debris. Forms lobate masses of hummocky terrain in steeply sloping upland areas

Qt TALUS--Talus from basalt flows in Singatse Range. Not consistently mapped in quadrangle

Qf_2 INTERMEDIATE ALLUVIAL FAN DEPOSITS--Lithologically and texturally similar to young alluvial fan deposits. Contacts between intermediate and young alluvial fan deposits are commonly gradational and poorly defined. Intermediate alluvial fan surfaces are slightly to moderately dissected with numerous well-defined drainage channels. Drainage is predominantly distributary, but some drainage channels head on fan surfaces. Relief due to dissection is generally less than 5 m. Constructional surfaces are slightly to moderately weathered with weak to moderate soil development and distinct desert pavement. Generally occurs in small widely scattered areas adjacent to mountain slopes

Qf_{2-1} INTERMEDIATE AND OLD ALLUVIAL FAN DEPOSITS, UNDIFFERENTIATED--Lithologically and texturally similar to young alluvial fan deposits. Morphologically intermediate and gradational between intermediate and old alluvial fan deposits. Also mapped in areas where intermediate and old alluvial fan deposits are complexly interrelated and difficult to map separately or where age relations are uncertain

Qp_2 YOUNGER PEDIMENT DEPOSITS--Lithologically, texturally and morphologically similar to intermediate alluvial fan deposits except that younger Pleistocene pediment deposits occur as veneers on pedimented bedrock and older alluvium. Contacts with intermediate and young alluvial fan deposits are commonly gradational and poorly defined. Probably includes some intermediate alluvial fan deposits in areas of slight dissection. Occurs along the west flanks of the Wassuk Range and the Singatse Range but does not occur along the east flanks of these ranges

Qp_{2-1} YOUNGER AND OLDER PEDIMENT DEPOSITS, UNDIFFERENTIATED--Lithologically, texturally, and morphologically similar to intermediate and old alluvial fan deposits, except that the pediment deposits occur as veneers on erosional surfaces cut into bedrock and older alluvium. Probably includes some intermediate and old alluvial fan deposits in areas of slight dissection. A major component of all pediment areas in the quadrangle. May occur in any area of the piedmont from mountain front to alluvial flat. Occur extensively along the west flank of the Singatse Range, the west flank of the Wassuk Range, and the north flank of the Pine Grove Hills. Not present along tectonically active mountain fronts

Qf_1 OLD ALLUVIAL FAN DEPOSITS--Lithologically and texturally similar to intermediate and young alluvial fan deposits. Fan surfaces are deeply dissected by well-developed subparallel drainage channels that head on the fan surface. Relief due to dissection is commonly 10 to 30 m. Commonly separated from younger depositional surfaces by abrupt erosional scarps. Remnant constructional fan surfaces are strongly weathered with moderately well to very well developed soils and well-developed desert pavement. Occur as small unduly scattered fan remnants adjacent to mountain slopes

Qp_1 OLD PEDIMENT DEPOSITS--Lithologically, sedimentologically, and morphologically similar to older alluvial fan deposits except that older Pleistocene pediment deposits occur as veneers on pedimented bedrock and Tertiary and (or) Quaternary alluvium. Probably includes some fan deposits in areas of slight to moderate dissection. Older Pleistocene pediment deposits are difficult to distinguish from old alluvial fan deposits in areas of pedimented alluvium. Underlies extensive areas along the west flanks of the Wassuk Range and the Singatse Range but does not occur along the east flanks of these ranges

QTp PEDIMENT DEPOSITS--Boulder to pebble gravel, sandy gravel and gravelly sand. Sandy matrix includes some silt and clay. Poorly to moderately sorted. Gravel clasts are subangular to subrounded. Occurs as veneers on bedrock erosion surfaces of deeply dissected piedmonts. Caps numerous scattered remnants of at least two erosion surfaces extending off the north flank of the Pine Grove Hills in the southern part of the quadrangle

QTg OLD ALLUVIAL GRAVEL AND SAND--Boulder to pebble gravel, sandy gravel, gravelly sand and sand. Gravel clasts are mostly subangular to subrounded. Loosely to moderately indurated matrix, predominantly sand and silt. Locally cemented by caliche

Twc SEDIMENTARY DEPOSITS OF WILSON CANYON--Unconsolidated or poorly consolidated sand and gravel

Tph SEDIMENTARY DEPOSITS OF PUMPKIN HOLLOW--Sand, gravel, and silt. May be partly or entirely same age as sedimentary deposits of Wilson Canyon

Tlb LANDSLIDE BRECCIA--Composed of sand to blocks, as much as 10 m across, of quartz monzonite of Gray Hills

Tsg SAND AND GRAVEL

Tss SANDSTONE, SILTSTONE, AND CONGLOMERATES--Same as "unnamed sedimentary rocks" of Gilbert and Reynolds (1973). Arkosic. K-Ar age of about 5 m.y. (Gilbert and Reynolds, 1973) on interbedded tuff in quadrangle

Tb BASALT--Includes some sand and gravel underlying the basalt. K-Ar age of about 11 to 7 m.y. (Gilbert and Reynolds, 1973, Proffett, 1977)

Tbi INTRUSIVE BASALT

Tba BASALTIC ANDESITE FLOWS

Tmr MORGAN RANCH FORMATION OF AXELROD (1956) AS MODIFIED BY GILBERT AND REYNOLDS (1973)--Sandstone, siltstone, shale, sandstone, and sedimentary breccia. Mostly granitic and metamorphic clasts

Tcv COAL VALLEY FORMATION OF AXELROD (1956) AS MODIFIED BY GILBERT AND REYNOLDS (1973)--Andesitic sandstone and conglomerate, coarse conglomerate with granitic clasts, mudstone, and siltstone. Common tuff or tuffaceous rocks (see Axelrod, 1956; Gilbert and Reynolds, 1973) Common vertebrate fossils (MacDonald, 1959). K-Ar date of about 9 m.y. (Evernden and others, 1964) in upper part of formation within quadrangle. As indicated by Gilbert and Reynolds (1973), and as shown on the map, the rocks that yield this date are correlative with the Coal Valley Formation although Axelrod (1956) referred to then as the "Smith Valley beds" which he correlated with the Morgan Ranch Formation. Includes two subunits as follows

Tcvs Shale unit of Gilbert and Reynolds (1973)

Tcvb Basaltic breccia of Gilbert and Reynolds (1973)

Tac ALDRICH STATION AND COAL VALLEY FORMATIONS, UNDIVIDED

Tas ALDRICH STATION FORMATION OF AXELROD (1956) AS MODIFIED BY GILBERT AND REYNOLDS (1973)--Mudstone, siltstone, and carbonaceous shale beds with lenses of lithic arenite and pebble conglomerate. Upward, the abundance of pebble conglomerate increases and beds of lapilli tuft are present (Gilbert and Reynolds, 1973, p. 2498). K-Ar age of about 11 m.y. (Gilbert and Reynolds, 1973) within quadrangle. Includes one subunit:

Tasb Andesite tuff breccia and sedimentary rocks

Tal ANDESITE OF LINCOLN FLAT--Consists of 1) andesite with phenocrysts of hornblende and plagioclase, 2) andesite with only hornblende phenocrysts, and 3) dacite with phenocrysts of quartz as well as plagioclase, biotite, and hornblende. Flows, volcaniclastic breccia (lahars), and associated tuff, breccia and sedimentary rocks. Potassium-argon ages range from 14 to 19 m.y. (Proffett and Proffett, 1976)

Tai ANDESITE INTRUSIVE ROCKS OF PROFFETT AND PROFFETT (1976)--In Singatse Range

Ta ANDESITE OR VOLCANIC ROCKS OF INTERMEDIATE COMPOSITION--Flows or breccia

Tsb SEDIMENTARY BRECCIA AND CONGLOMERATE

Tob OLIVINE PYROXENE BASALT--Flows and coarse breccias. Phenocrysts of olivine and pyroxene in very fine grain crystalline matrix (Proffett and Proffett, 1976)

Tgp TUFF AND BRECCIA OF GALLAGHER PASS--Crystal-rich dacite tuff breccia, breccia, and ash-flow tuff with plagioclase, biotite, and pyroxene phenocrysts (Proffett and Proffett, 1976)

Ttu TUFF, UNDIVIDED--Primarily nonwelded vitric and crystal tuffs. Includes several cooling units of different crystal content. Includes probable equivalents of Bluestone Mine Tuff

Tlb BLUESTONE MINE TUFF--White to pale-colored crystal-poor unwelded tuff, tuff breccia, and sediments interbedded with crystal-poor pale-brown to red poorly welded tuffs (Proffett and Proffett, 1976)

Tsi SINGATSE TUFF--Brown to red-brown strongly to moderately welded crystal-rich ash-flow tuff with plagioclase, quartz, sanidine, biotite, and hornblende phenocrysts and sparse pumice fragments. Abundant foreign rock fragments near base. K-Ar ages of 26-25 m.y. (Proffett and Proffett, 1976, Bingler, 1978)

Tm MICKEY PASS TUFF--Consists of two cooling units, the lower one named the Guild Mine Member and the upper one the Weed Heights Member, separated by rhyolitic sediments and poorly welded tuff. The Guild Mine Member consists of brown strongly welded crystal-rich ash-flow tuff. Plagioclase, biotite, and pyroxene phenocrysts become less abundant upward; upper part contains sanidine, quartz, plagioclase, and minor biotite phenocrysts, and is less densely welded than lower part. Weed Heights Member consists of buff, lavender, reddish-brown, moderately welded, moderately crystal rich ash-flow tuff with plagioclase, sanidine, quartz, biotite phenocrysts and abundant white pumice fragments. K-Ar ages of 28 to 26 m.y. (Proffett and Proffett, 1976, Bingler, 1978)

Ks QUARTZ MONZONITE OF STROSNIDER RANCH--(Granodiorite in classification of Streckeisen, 1973) Hornblende-biotite bearing, medium- to coarse-grained, small potassium feldspar phenocrysts, color index 12-15 (John, 1983). Cretaceous age based on similarity of rock to dated Cretaceous rocks (Bald Mountain pluton of Bingler, 1978) in adjacent Schurz quadrangle.

Jy GRANITIC ROCKS OF YERINGTON--(Knopf, 1918, Heatwole, 1978, Proffett, 1979, John, 1983, Dilles and others, 1983). Consists of four phases intruded in the following order: 1) equigranular granodiorite (granodiorite to quartz diorite in classification of Streckeisen, 1973). Included is Black Mountain pluton of Bingler (1978) which has been dated by K-Ar methods as 146 and 148 m.y. on hornblende (Bingler, 1972). Zircon uranium-lead date of 169 m.y. (Dilles and others, 1983). 2) equigranular quartz monzonoite (granodiorite in classification of Streckeisen, 1973), biotite and hornblende-bearing, medium- to coarse-grained. K-Ar age of 161 m.y. (Heatwole, 1978, p.60). Included is Black Mountain pluton of Bingler (1978). 3) porphyritic quartz monzonite (granodiorite in classification of Streckeisen, 1973), potassium feldspar phenocrysts, medium-grained. 4) quartz monzonite porphyry dikes (granodiorite in classification of Streckeisen, 1973), biotite-and hornblende-bearing. K-Ar age of 141 m.y. (Heatwole, 1978). Zircon uranium-lead date of 168 m.y. (Dillis and others, 1983).

Jpg PORPHYRITIC GRANODIORITE--Hornblende-bearing, porphyry to fine-grained porphyritic granodiorite. K-Ar age of 146 m.y. (John, 1983). Same as granodiorite porphyry of Bingler (1978) which is dated by K-Ar methods as 117 m.y. on hornblende and 81 m.y. on biotite (Bingler and others, 1980)

Jms QUARTZ MONZONITE OF MOUNT SIEGEL--(Granite to quartz diorite in classification of Streckeisen, 1973). Fine- to medium-grained, hornblende-biotite bearing, color index 15-20, local strong albitic alteration. Lithologically similar, and perhaps related, to quartz monzonite of Gray Hills. K-Ar ages of 158 m.y. on hornblende, and 103 m.y. on biotite (Bingler and others, 1980, p. 15)

Jgh HORNBLENDE-BIOTITE QUARTZ MONZONITE OF GRAY HILLS--Homogenous,medium gray, equigranular to slight porphyritic rock composed of about 30 percent plagioclase, 30 percent microcline perthite, 20 percent interstitial quartz, and 20 percent hornblende and biotite (Bingler, 1978). Common albitic alteration. In Mt. Grant quadrangle to southeast (Stewart and others, 1981), unit is mostly a granite by classification of Streckeisen (1973). K-Ar age of about 140 and 154 m.y. on hornblende and about 100 m.y. on biotite (Bingler, 1978)

Jg GYPSUM--White and massive

JŦla LIMESTONE AND ARGILLITE--Black silty limestone, limy argillite, sparse flow-banded rhyolite; 50- to 100-m-thick limestone at top

Ŧl LIMESTONE--Medium-gray medium- to thick-bedded limestone; thinly laminated in top fourth

Ѣ la LIMESTONE, ARGILLITE, AND FELSITE--Medium-gray limestone, argillitic limestone, limy argillite, siltstone, and sandstone. Contains late Karnian and Early to Middle Norian (Late Triassic) Halobia, Anatropites, and Gonionotites (Silberling, 1983)

Ѣ v METAVOLCANIC ROCKS--Fine-grained porphyritic andesite; in some flows, glomeroporphyritic plagioclase laths form clusters of crystals that resemble chicken tracks. Minor rhyolite flows, breccias, and sedimentary rocks. Dated by Rb-Sr methods as 215 m.y. old (Einaudi, 1978)

MzPzm METAMORPHIC ROCKS--Unknown age, 6 km southeast of Yerington

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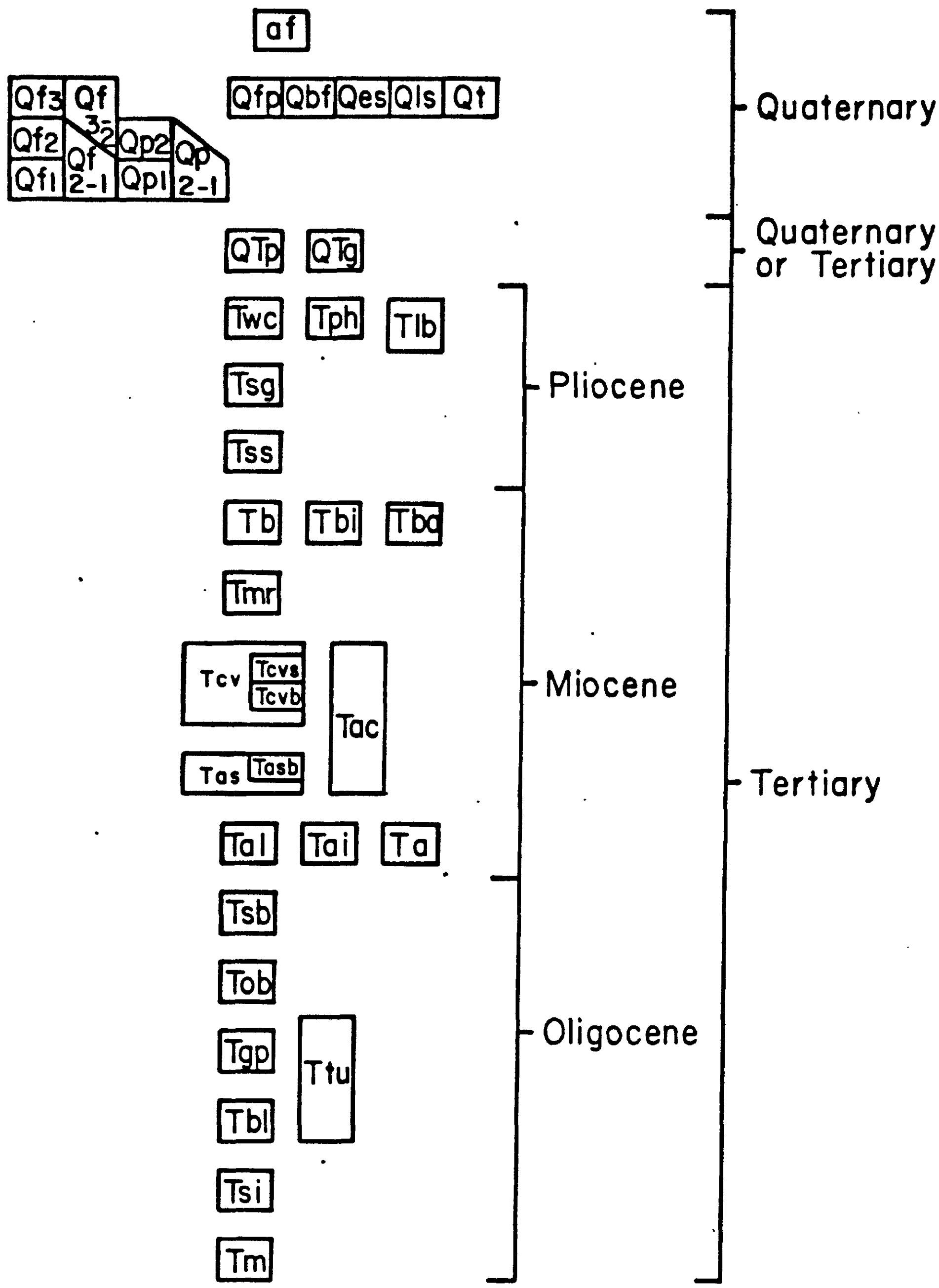
CORRELATION OF MAP UNITS



Ks — Cretaceous

Jy Jpg Jms Jgh — Jurassic

Jg

JTRla — Jurassic and Triassic

TRl

TRla — Triassic

TRv

MzPm — Mesozoic or Paleozoic

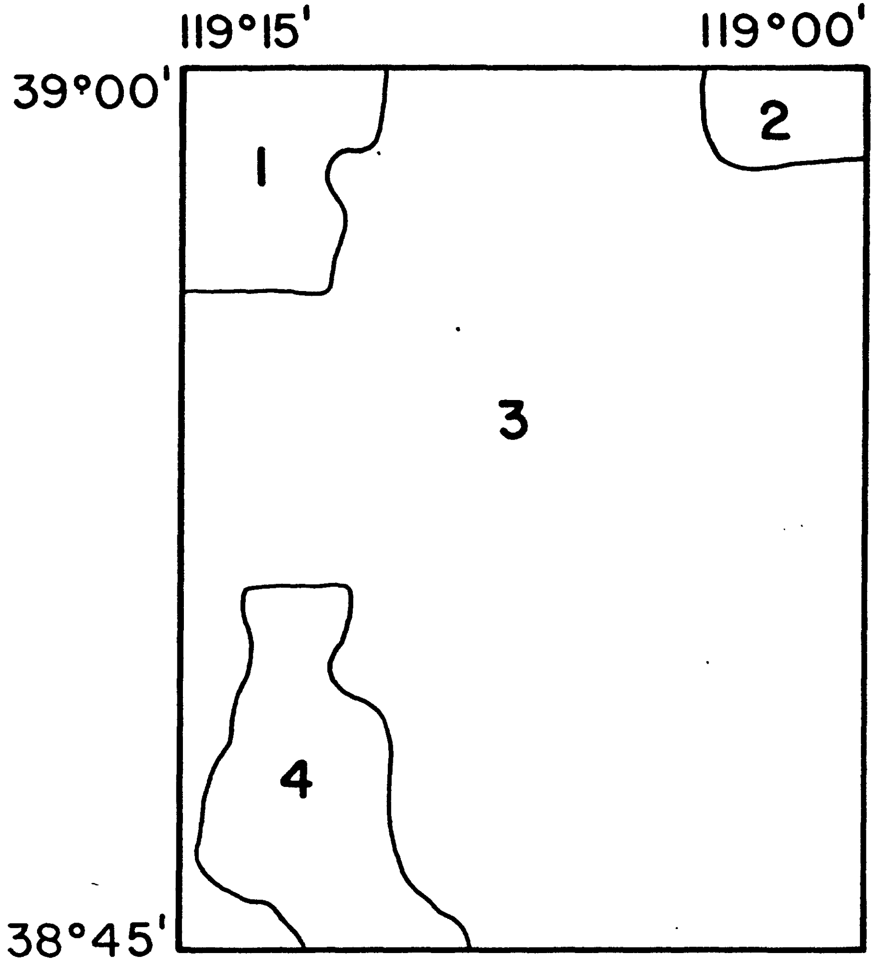
Contact. Queried where approximately located.

Fault, showing dip. Dashed where inferred or approximately located, dotted where concealed. Bar and ball on down thrown side.

Syncline.

Anticline.

Strike and dip of beds or compaction foliation in ash flow tuffs.



SOURCES OF MAPPING

1. Proffett and Proffett, 1976, Knopf, 1918
2. E.C. Bingler, unpublished map, 1979
3. J.H. Stewart assissted by Jerry Infeld, D.C. Johannesen and C. Banister, 1977-1981. Quaternary geology by J.C. Dohrenwend, 1980-1981
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