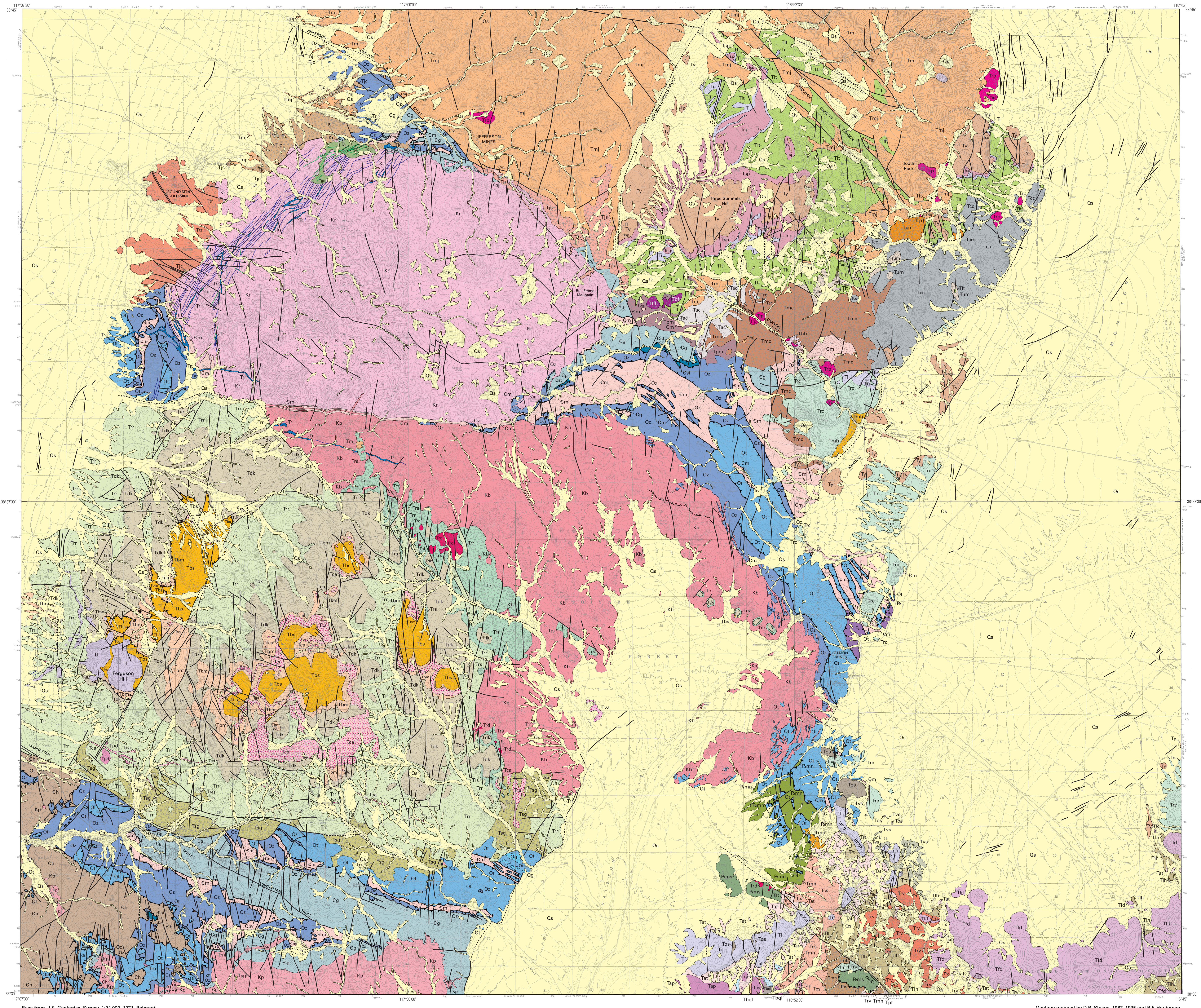
Figure 1. Oligocene Manhattan caldera; view southwest across upper end of RalstonValley. High central peaks of the caldera—The Bald Sister, The Bald Brother, Bald Mountain—consist of Oligocene ash-flow tuffs from beyond the caldera, resting on caldera fill of the Oligocene Round Rock Formation (Trr). Low outcrops in foreground and middle distance are granite of the Cretaceous Belmont pluton (Kb) of the granite of Shoshone Mountain.

Figure 2. Layered Oligocene eruptive megabreccia of Jefferson Summit (Tjs), downslope from inferred megabreccia eruption site. Megabreccia apron extends from schist of underlying Cambrian Gold Hill Formation (Ꞓg) to sun-lighted hill in middle distance. Beyond (in shadow) is Oligocene tuff of Mount Jefferson (Tmj) extending to the peak of Mount Jefferson.

Figure 3. Interior of Oligocene Mount Jefferson caldera consisting of tuff of Mount Jefferson (Tmj); view northeast up Slaughterhouse Canyon. Mount Jefferson at upper right. Erosion has exposed about 1,000 m of intracaldera fill of tuff of Mount Jefferson.

Figure 4. Granite massif of the Cretaceous Round Mountain pluton (Kr) of the granite of Shoshone Mountain. View south down Sawmill Canyon from the summit of Mount Jefferson. High peaks of the massif are Shoshone Mountain (left) and Spanish Peak (beyond right shoulder of Shoshone Mountain). Round Mountain mine dumps, far right, at edge of Big Smoky Valley. Jefferson mining district in middle distance, right center.

Figure 5. Laminated limestone of the Ordovician Toquima Formation (Ot), 0.5 km northwest of mouth of East Manhattan Wash. Limestone is recrystallized and granular; individual microscopic calcite crystals are lozenge-shaped and subparallel to laminae. Note boudinaged chert layers.



Base from U.S. Geological Survey, 1:24,000, 1971, Belmont East, Belmont West, Corcoran Canyon, Jefferson, Manhattan, Round Mountain
Projection and 10,000-foot grid ticks: Nevada coordinate system, central zone (transverse Mercator)
1,000-meter Universal Transverse Mercator grid ticks, zone 11
1927 North American datum

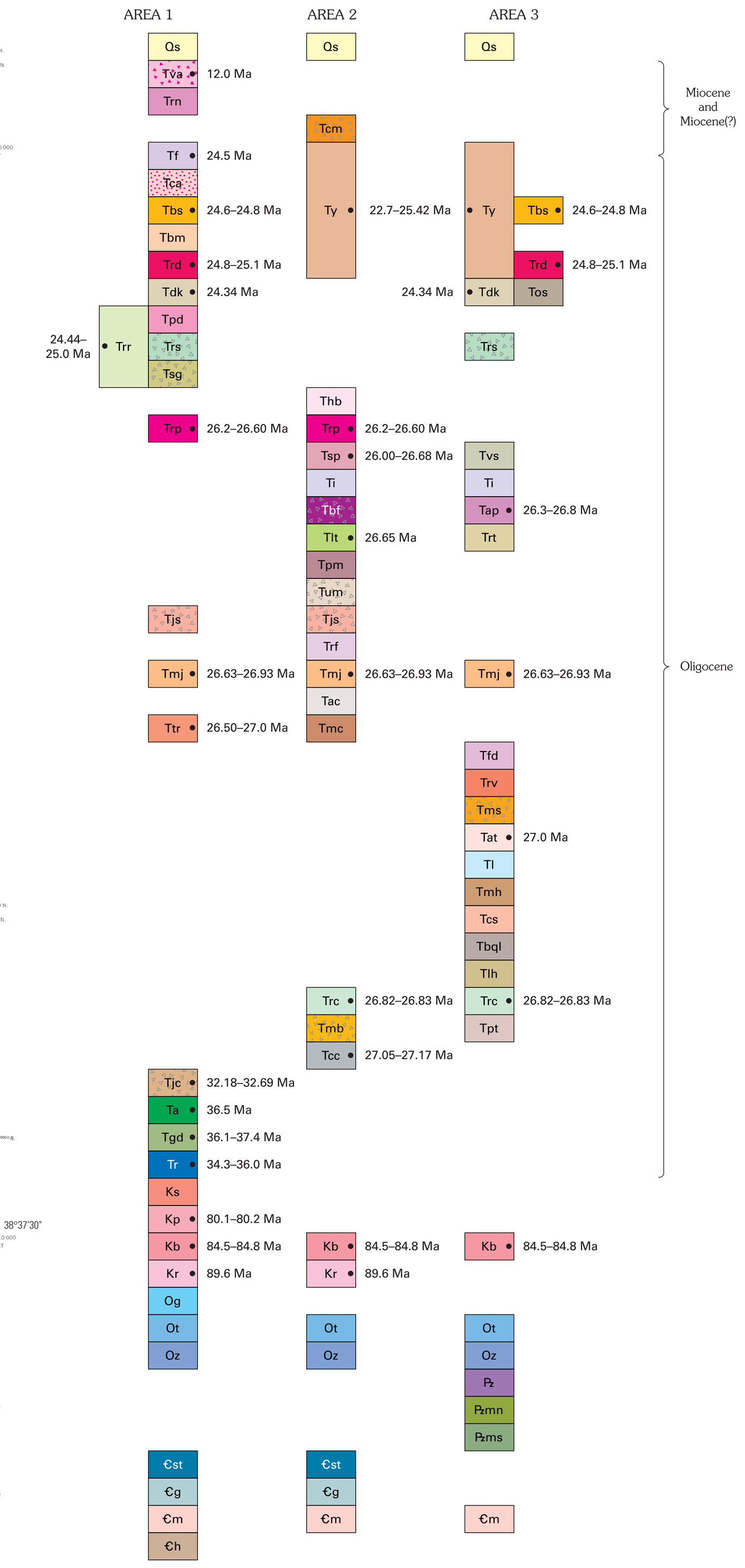
SCALE 1:48,000
1 1/2 0 1 2 3 4 MILES
1 .5 0 1 2 3 4 5 KILOMETERS

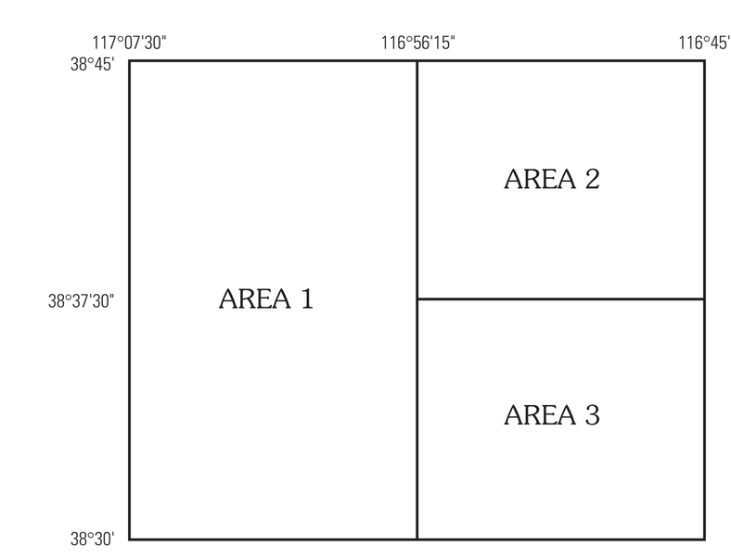
CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 10-FOOT (BELMONT EAST AND CORCORAN CANYON) or 20-FOOT (MANHATTAN) CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

MAP LOCATION

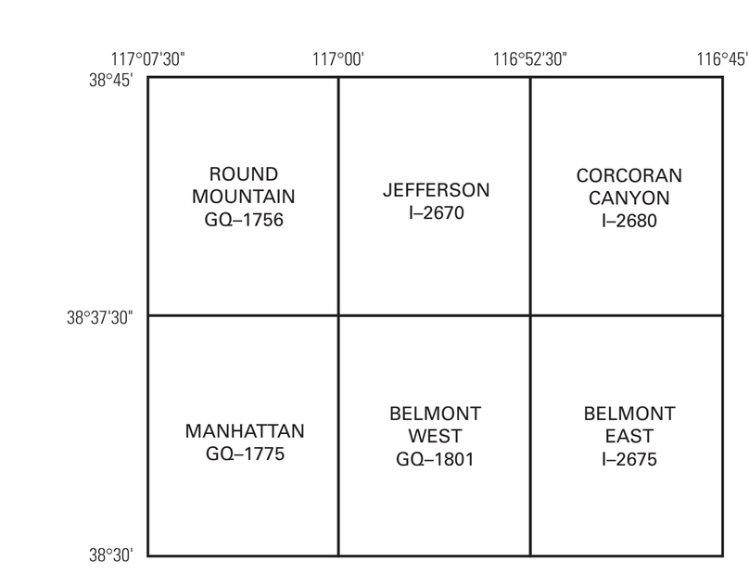
Geology mapped by D.R. Shawe, 1967–1995 and R.F. Hardyman, 1983–1984, 1991–1995. Assisted by P.H. Close and Roland Grygo, 1967–68; S.R. Shawe, 1973–74; and E.E. Foord, 1978
Geology digitized by Geologic Data Systems
Editing and digital cartography by Alessandro J. Donatich
Manuscript approved for publication November 18, 1999

CORRELATION OF MAP UNITS





INDEX TO SUBDIVISIONS OF MAP AREA



INDEX TO 7 1/2-MINUTE QUADRANGLES

LIST OF MAP UNITS

- Qs — Surficial deposits (Quaternary)
- Tva — Glass-shard tuff (Miocene)
- Trn — Rhyolite necks (Miocene?)
- Tcm — Megabreccia of Corcoran Creek (Miocene?)
- Ty — Younger ash-flow tuffs and associated tuffaceous siltstone (Miocene and Oligocene)
- Tf — Dacite of Ferguson Hill (Miocene and Oligocene)
- Tca — Crone Gulch Andesite (Oligocene)
- Tbs — Tuff of the Bald Sister (Oligocene)
- Tbm — Bald Mountain Formation (Oligocene)
- Trd — Rhyolite and rhyodacite plugs (Oligocene)
- Tdk — Diamond King Formation (Oligocene)
- Tos — Crystal-rich ash-flow tuff (Oligocene)
- Trr — Round Rock Formation (Oligocene)
  - Tpd — Rhyolite plug and dikes
  - Trs — Megabreccia of Silver Creek
  - Tsg — Megabreccia of Sloppy Gulch
- Thb — Heterolithic breccia (Oligocene)
- Trp — Rhyolite plug (Oligocene)
- Tsp — Shingle Pass Tuff (Oligocene)
- Tvs — Volcanic sandstone (Oligocene)
- Ti — Isom-type ash-flow tuff (Oligocene)
- Tbf — Megabreccia of Bull Frame Canyon (Oligocene)
- Tap — Andesite plugs and flows (Oligocene)
- Trt — Rhyolitic ash-flow tuff (Oligocene)
- Tlt — Volcaniclastic rocks of Little Table Mountain (Oligocene)
- Tpm — Mesobreccia of Paleozoic rock fragments (Oligocene)
- Tum — Unnamed megabreccia (Oligocene)
- Tjs — Megabreccia of Jefferson Summit (Oligocene)
- Trf — Rhyolite flow rock (Oligocene)
- Tmj — Tuff of Mount Jefferson (Oligocene)
- Tac — Tuff of Antone Canyon (Oligocene)
- Ttr — Tuff of Round Mountain (Oligocene)
- Tmc — Megabreccia of Meadow Canyon (Oligocene)
- Tfd — Rhyolite flows and domes (Oligocene)
- Trv — Vitrophyric rhyolite lava (Oligocene)
- Tms — Mesobreccia (Oligocene)
- Tat — White ash-fall tuff (Oligocene)
- Tl — Lacustrine limestone unit (Oligocene)
- Tmh — Megabreccia of Hunts Canyon (Oligocene)
- Tcs — Claystone-siltstone-sandstone unit (Oligocene)
- Tbql — Ash-flow tuff (Oligocene)
- Tlh — Rhyolitic lahar (Oligocene)
- Trc — Tuff of Ryecroft Canyon (Oligocene)
- Tmb — Monolithologic megabreccia (Oligocene)
- Tpt — Layered pumice tuff (Oligocene)
- Tcc — Tuff of Corcoran Canyon (Oligocene)
- Tjc — Megabreccia of Jefferson Canyon (Oligocene)
- Ta — Andesite dikes (Oligocene)
- Tgd — Granodiorite of Dry Canyon (Oligocene)
- Tr — Rhyolite dikes, sills, and plug (Oligocene)
- Ks — Syenite plug (Cretaceous)
- Kp — Granite of Pipe Spring (Cretaceous)
- Kb — Belmont pluton of the granite of Shoshone Mountain (Cretaceous)
- Kr — Round Mountain pluton of the granite of Shoshone Mountain (Cretaceous)
- Og — Gabbro (Ordovician?)
- Ot — Toquima Formation (Ordovician)
- Oz — Zanzibar Formation (Ordovician)
- Pz — Limestone unit (Paleozoic, undivided)
- Rocks of the Monarch area (Paleozoic, undivided)
  - Pzmn — Northern facies
  - Pzms — Southern facies
- Ꞓst — Siltstone unit (Cambrian?)
- Ꞓg — Gold Hill Formation (Cambrian)
- Ꞓm — Mayflower Formation (Cambrian?)
- Ꞓh — Harkless Formation (Cambrian)

Contact

High-angle fault—Dotted where concealed. Bar and ball on downthrown side where relative movement is known. Opposed arrows show strike-slip movement

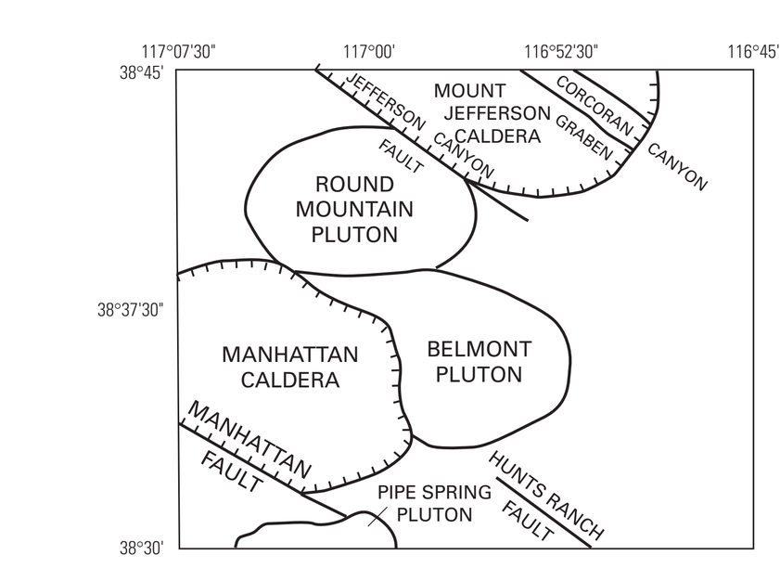
Thrust fault—Dotted where concealed. Teeth on upper plate

Overturned thrust fault—Dotted where concealed. Teeth point to overturned lower plate

Detachment fault—Dotted where concealed. Teeth on upper plate

Margin of megabreccia pipe—Hachures inside pipe

Mylonite layer



INDEX TO MAJOR STRUCTURES

Figure 18. Stone cabin at juncture of Antone and Meadow Canyons. Photo taken 1994. Cabin destroyed by vandals 1995–1998.

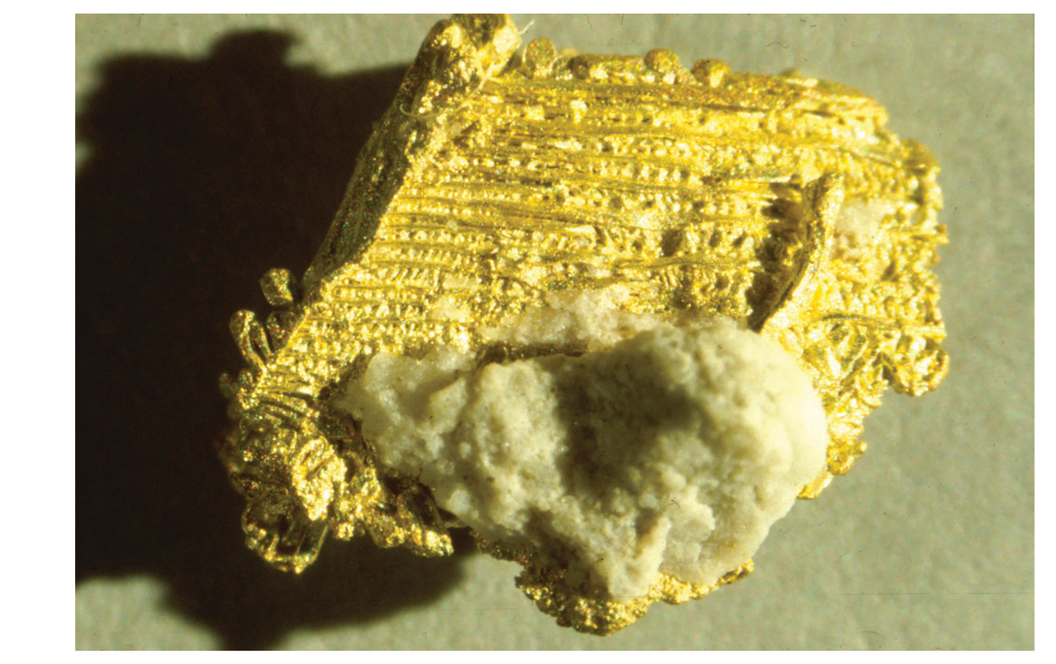


Figure 17. Manhattan gold. A crystalline dendrite of gold engulfs quartz from a veinlet in Cambrian Gold Hill Formation (Ꞓg). Age of gold mineralization is about 16 Ma. Specimen measures 5 mm in long dimension.

Figure 16. Mineralized granite near the southwest margin of Cretaceous Round Mountain pluton (Kr). Thin molybdenite-bearing quartz veinlets and iron-oxide-filled fractures cut altered granite. Analysis of sample collected from outcrop indicated 0.5 ppm silver.

Figure 15. Edgewise conglomerate in relatively undeformed (undivided) Paleozoic limestone unit (Pz) that forms a small klippe resting on argillite of the Ordovician Toquima Formation (Ot) in the southwest corner of sec. 19, T. 9 N., R. 46 E., Belmont East quadrangle (see Shawe and Byers, 1999, for exact location).

Figure 14. Folded limestone of (undivided) Paleozoic limestone unit (Pz) 1.5 km northeast of Belmont mines. The pocket knife lies parallel to well-developed axial-plane cleavage.

Figure 6. Tight fold in limestone of the Ordovician Zanzibar Formation (Oz), Jefferson Canyon.

Figure 7. Lower member of tuff of Pipe Organ Spring (part of Ty) in the headwaters of Meadow Creek. Exposure is called The Pipe Organ, from which a nearby spring derived its name. The unit is one of several upper Oligocene or lower Miocene ash-flow tuffs, sources of which lie outside the area of the southern Toquima Range.

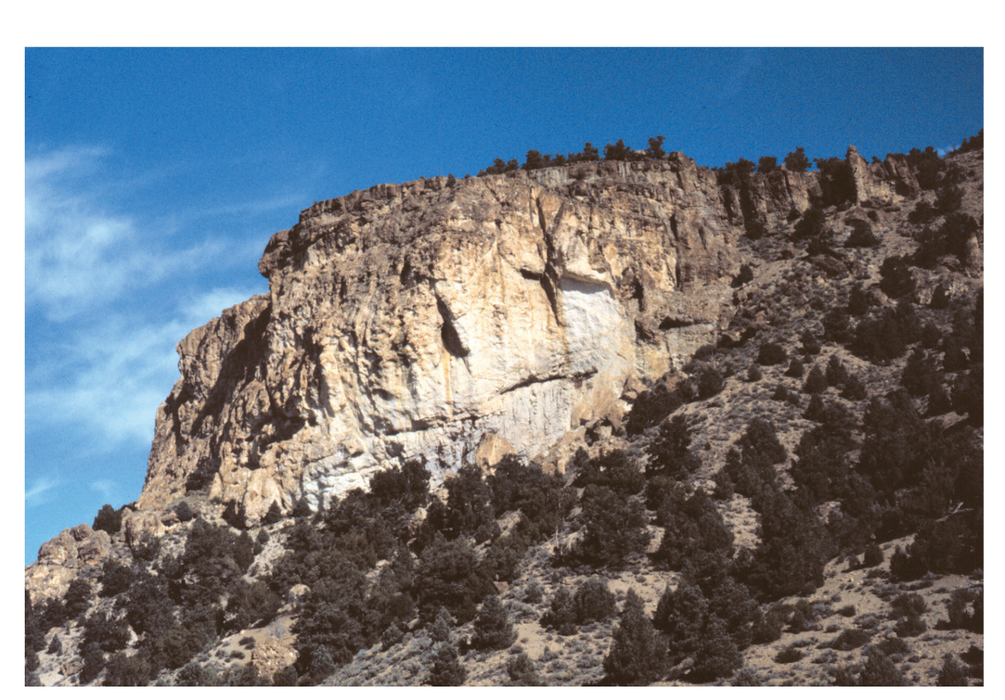


Figure 8. Oligocene rhyolite plug (Trp; light-colored area of cliff) 3 km northwest of mouth of Meadow Canyon. Plug is surrounded by heterolithic breccia (Thb; dark area peripheral to plug) that consists of brecciated megabreccia formed as a result of plug emplacement. Heterolithic breccia extends tens to a few hundred meters outward from plug.

Figure 9. Strongly deformed siliceous argillite of the Ordovician Zanzibar Formation (Oz) in a small klippe infolded into Cambrian(?) Mayflower Formation (Ꞓm), east of head of Ryecroft Canyon. Folded strata exhibit well-developed axial-plane cleavage.

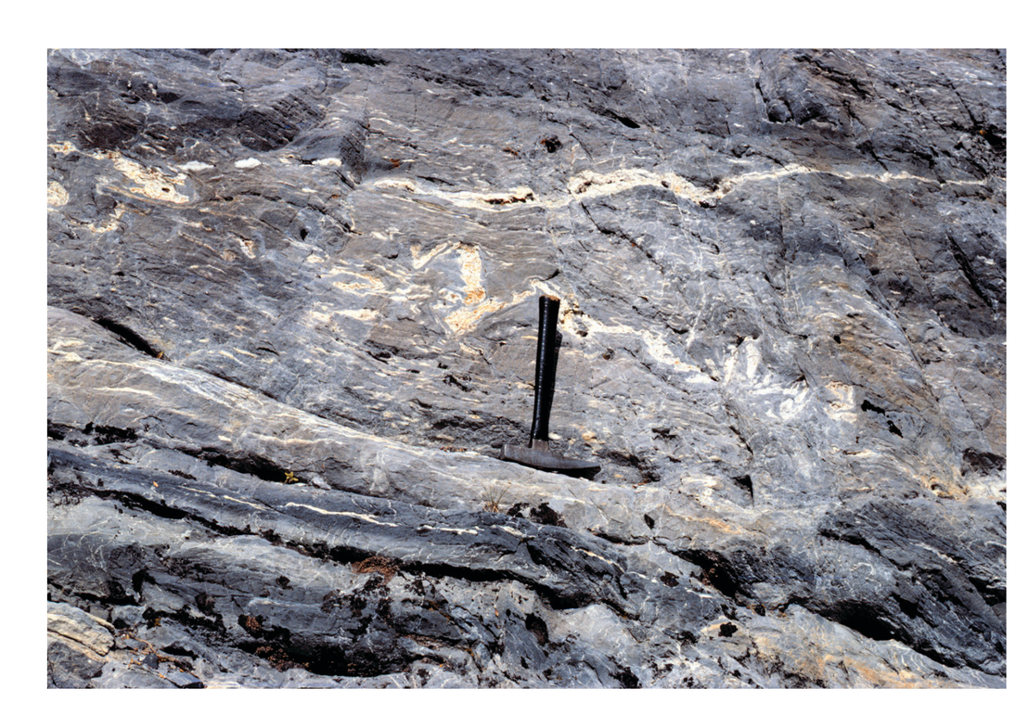


Figure 10. Brecciated and compressed calcite vein in deformed layer of limestone of the Ordovician Zanzibar Formation (Oz) about 0.5 km south of the head of Ryecroft Canyon. Calcite vein in higher limestone layer, and higher and lower limestone layers, are relatively undeformed.

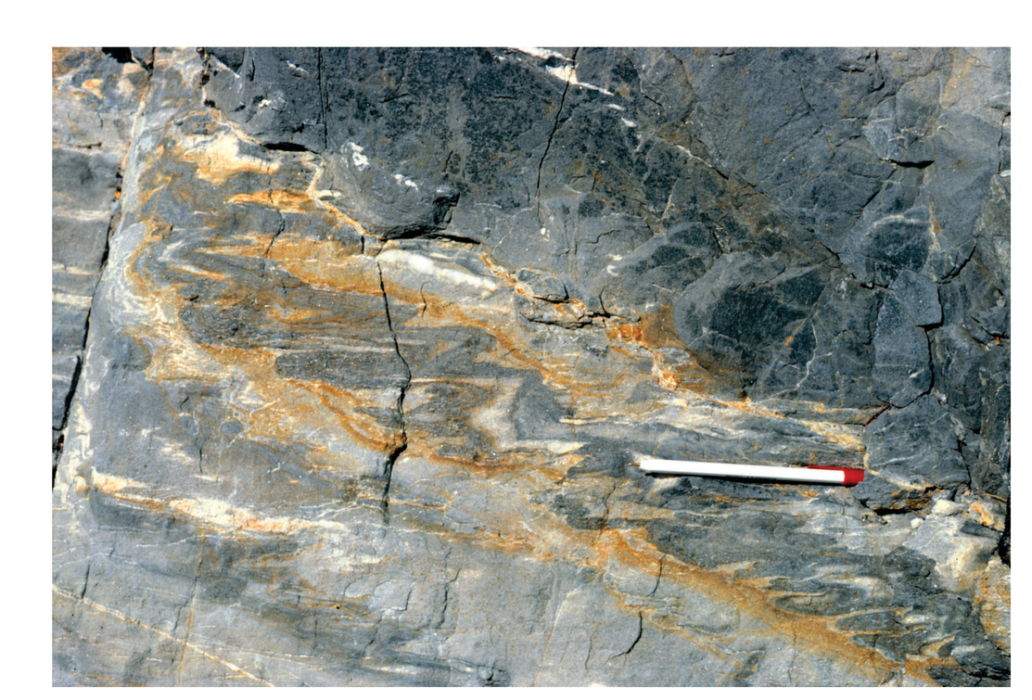


Figure 11. Drag-folded layers in limestone of the Ordovician Zanzibar Formation (Oz); same area as figure 10. Folding resulted from relative movement of high layers to the right. Small fault at left edge of photograph offsets limestone layers a few centimeters.

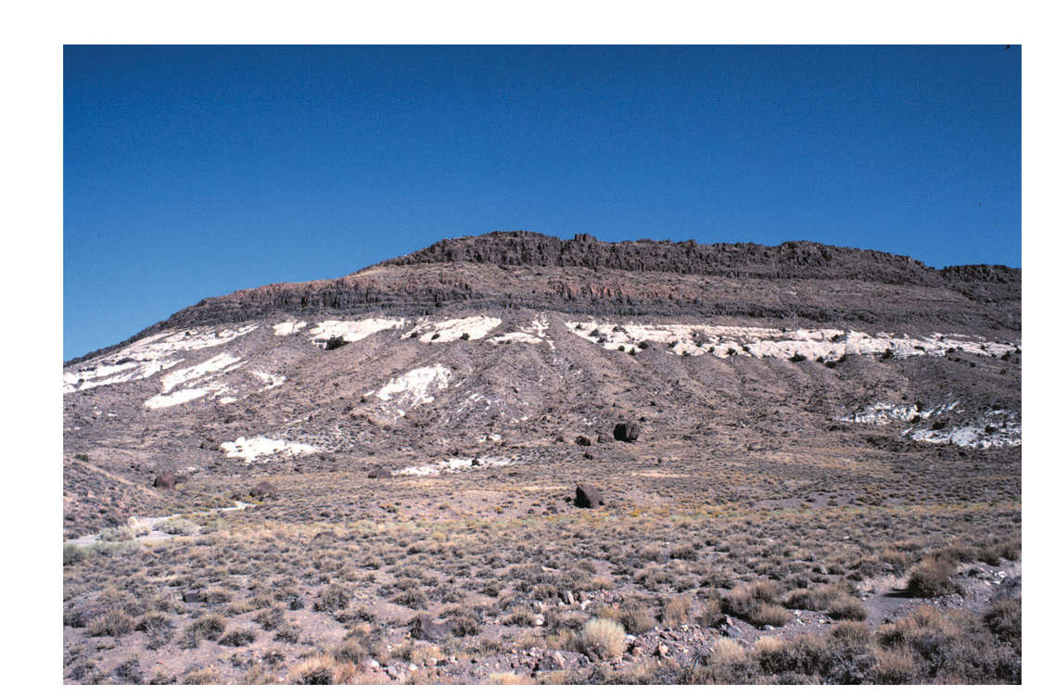


Figure 12. Oligocene white ash-fall tuff formation (Tat) overlain by lower and upper members of Oligocene Isom-type ash-flow tuff formation (Ti), about 3 km south of Monarch site on east side of Ralston Valley.

Figure 13. Porphyritic granite of the Cretaceous Belmont pluton (Kb) of the granite of Shoshone Mountain; outcrop at Devils Gate in Ralston Valley, about 4 km southwest of Belmont town.

GEOLOGIC MAP OF PART OF THE SOUTHERN TOQUIMA RANGE AND ADJACENT AREAS, NYE COUNTY, NEVADA

By
Daniel R. Shawe

2002

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