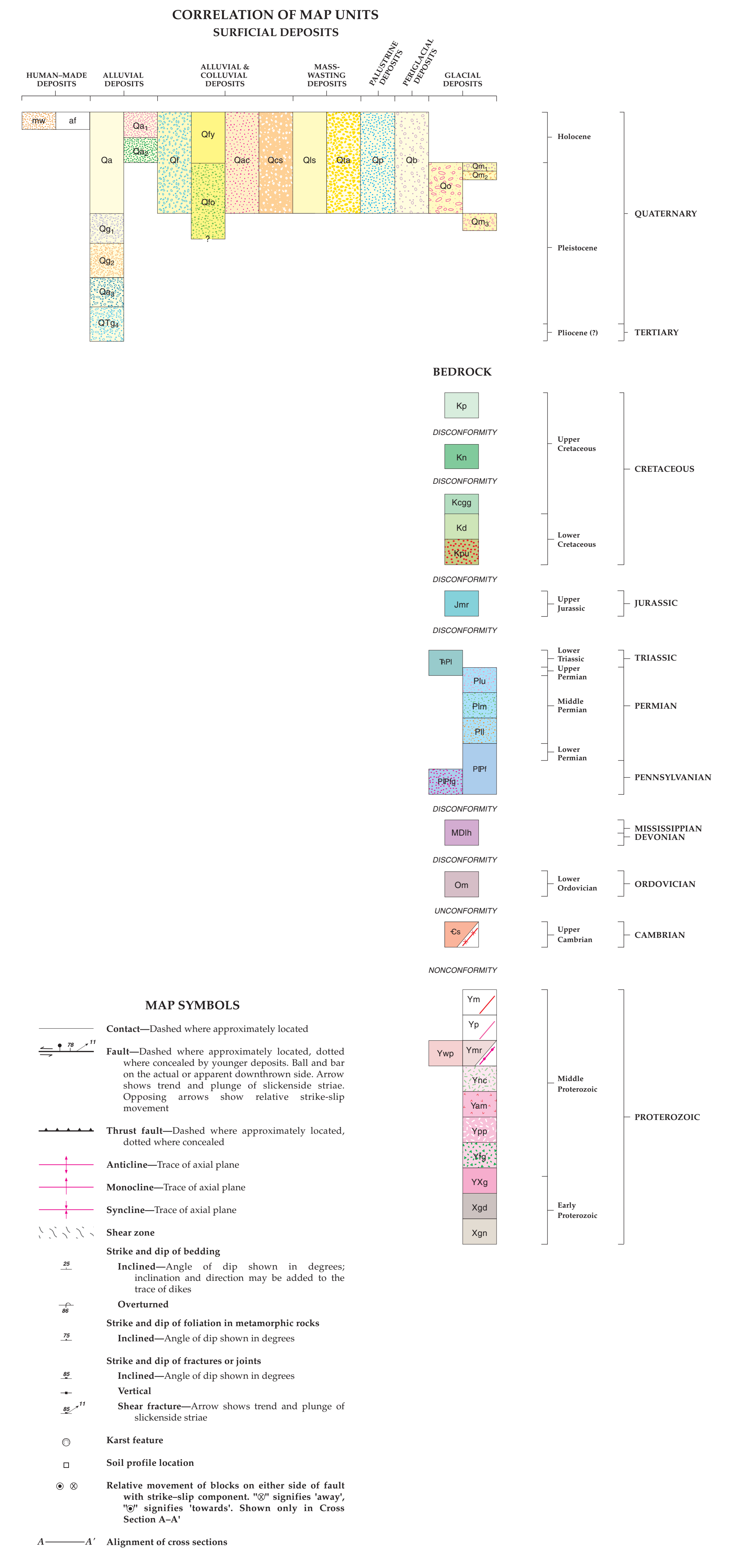


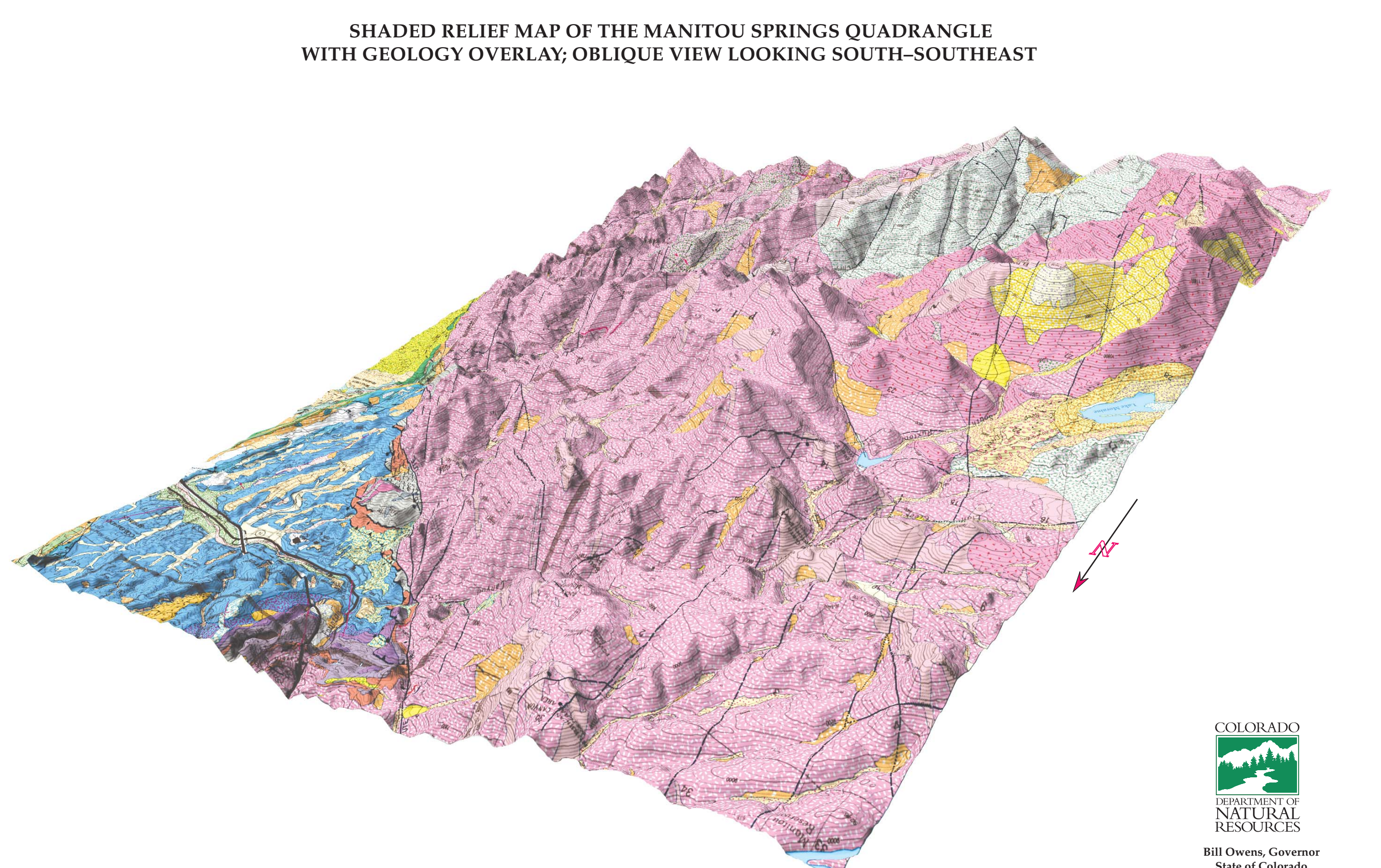
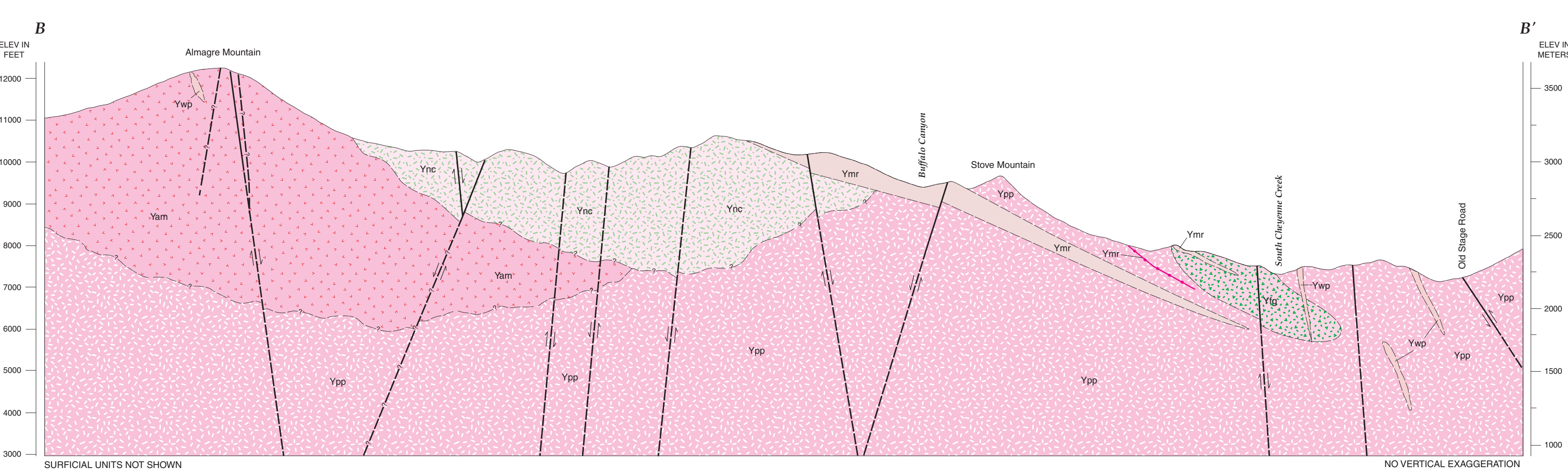
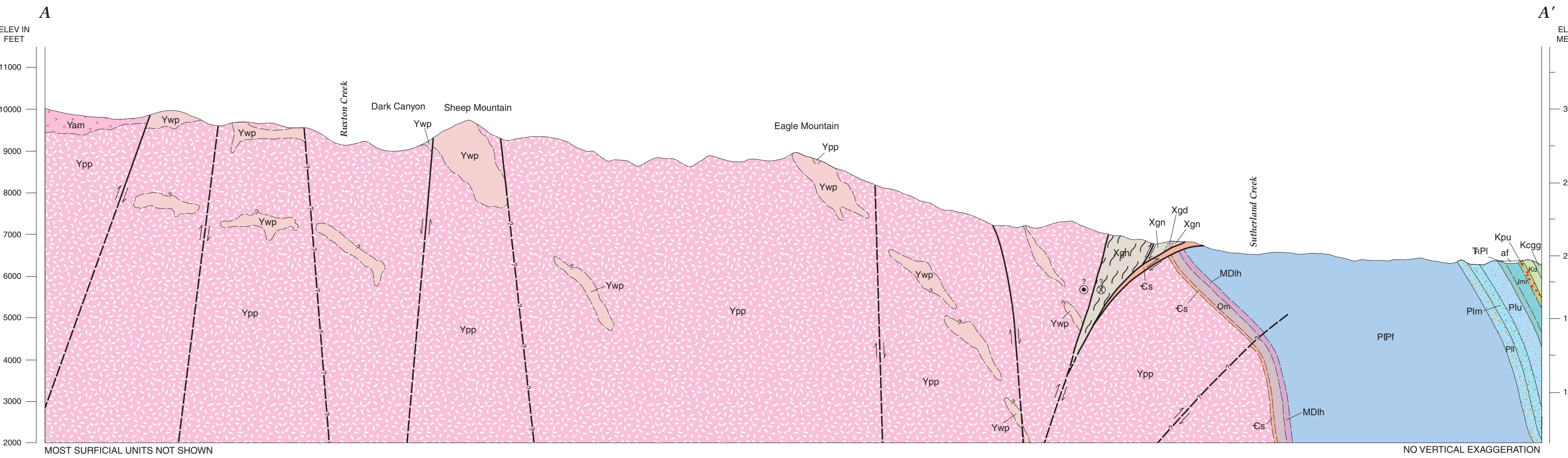
- MAP UNITS**
The complete description of map units and references are in the accompanying booklet.
- SURFICIAL DEPOSITS**
- HUMAN-MADE DEPOSITS**
- af Artificial fill (latest Holocene)
 - mrw Mine waste (latest Holocene)
- ALLUVIAL DEPOSITS**
- Qa Stream-channel, flood-plain, and terrace alluvium, undivided (Holocene to late Pleistocene)
 - Qa1 Alluvium one (late Holocene)
 - Qa2 Alluvium two (late to early Holocene)
 - Qa3 Pediment gravel one (middle Pleistocene)
 - Qa4 Pediment gravel two (middle Pleistocene)
 - Qa5 Pediment gravel three (middle? to early Pleistocene)
 - Qa6 Pediment gravel four (early Pleistocene to late Pliocene)
- ALLUVIAL AND COLLUVIAL DEPOSITS**
- Qac Alluvium and colluvium, undivided (Holocene to late Pleistocene)
 - Qcs Colluvium and sheetwash deposits, undivided (Holocene to late Pleistocene)
 - Qf Fan deposits (Holocene to late Pleistocene)
 - Qfy Young fan deposits (Holocene)
 - Qfk Old fan deposits (late to middle? Pleistocene)
- MASS-WASTING DEPOSITS**
- Qta Talus deposits (Holocene to late Pleistocene)
 - Qtl Landslide deposits (Holocene to late Pleistocene)
- PALUSTRINE DEPOSITS**
- Qsp Paludal sediments (Holocene to late Pleistocene)
- PERIGLACIAL DEPOSITS**
- Qdb Block-slope deposits (Holocene to late Pleistocene)
- GLACIAL DEPOSITS**
- Qoo Outwash (late Pleistocene)
 - Qom1 Morainal deposit one (late Pleistocene)
 - Qom2 Morainal deposit two (late Pleistocene)
 - Qom3 Morainal deposit three (late middle Pleistocene)
- BEDROCK**
- MESOZOIC ROCKS**
- Kp Pierre Shale (Upper Cretaceous)
 - Kn Niobrara Formation, (Upper Cretaceous)
 - Kgg Graneros Shale, Greenhorn Limestone, and Carlile Shale, undivided (Upper Cretaceous)
 - Kd Dakota Sandstone (Lower Cretaceous)
 - Kpl Purgatoire Formation (Lower Cretaceous)
 - Jmr Morrison Formation and Ralston Creek Formation, undivided (Upper Jurassic)
 - TPI Lykins Formation (Lower Triassic? and Upper Permian)
- PALEOZOIC ROCKS**
- Lyons Sandstone (Permian)
- Plu upper unit
 - Plm middle unit
 - Plf lower unit
 - PPF Fountain Formation (Lower Permian and Pennsylvanian)
 - PEP Glen Eyrie Member of the Fountain Formation (Lower Pennsylvanian)
 - MDh Handsprable Limestone Member of the Leadville Limestone (Mississippian) and Williams Canyon Formation (Devonian), undifferentiated
 - Om Manitou Limestone (Lower Ordovician)
 - Cs Sawatch Sandstone (Upper Cambrian)
- PROTEROZOIC ROCKS**
- Ym Mafic dikes (Middle Proterozoic)
 - Yp Pegmatite (Middle Proterozoic)
 - Ymr Mount Rosa granite (Middle Proterozoic)
 - Ywp Windy Point granite (Middle Proterozoic)
 - Ync Granite of Nelson Camp (Middle Proterozoic)
 - Yam Granite of Almagre Mountain (Middle Proterozoic)
 - Ypp Fikes Peak Granite (Middle Proterozoic)
 - Yfg Fayalite granite (Middle Proterozoic)
 - YXg Granite (Early or Middle (?) Proterozoic)
 - Xgd Granodiorite (Early Proterozoic)
 - Xgn Migmatitic gneiss (Early Proterozoic)



Base from U.S. Geological Survey, 1984
North American Datum of 1927. Projection and 10,000-foot ticks:
Colorado coordinate system, central zone (Lambert conformal conic)

SCALE 1:24,000

Geology mapped in 2002
Digital map prepared by Jason Wilson



GEOLOGIC MAP OF THE MANITOU SPRINGS QUADRANGLE, EL PASO AND TELLER COUNTIES, COLORADO

By John W. Keller, Christine Siddoway, Matthew L. Morgan, Erik E. Route,
Matthew T. Grizzell, Raffaello Sacchetti, and Adair Stevenson

