

GEOLOGIC MAP OF THE DILLON QUADRANGLE, SUMMIT AND GRAND  
COUNTIES, COLORADO

By Karl S. Kellogg

2002

MISCELLANEOUS FIELD STUDIES MAP MF-2390

Version 1.0

*Pamphlet accompanies map*

U.S. DEPARTMENT OF THE INTERIOR  
U.S. GEOLOGICAL SURVEY

Base from U.S. Geological Survey, 1987

Polyconic projection; longitude of central meridian 105.5°  
North American Datum of 1927; 10,000-foot grid based on  
Colorado coordinate system, central zone; 1,000-meter grid ticks, zone 13

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This map was produced on request, directly from  
digital files, on an electronic plotter. It is also  
available as a PDF file at <http://geology.cr.usgs.gov>

CONTOUR INTERVAL 40 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

LIST OF MAP UNITS

[See accompanying pamphlet for detailed descriptions of map units.]

- af Artificial fill (recent)
- Qal Alluvium (Holocene)
- Qf Fan deposits (Holocene and upper Pleistocene)
- Qt Talus (Holocene and upper Pleistocene)
- Qcl Colluvium and loess, undivided (Holocene and upper Pleistocene)
- Qac Alluvium and colluvium, undivided (Holocene and upper Pleistocene)
- Qls Younger landslide deposits (Holocene and upper Pleistocene)
- Qr Rock-glacier deposits (Holocene and upper Pleistocene)
- Qg Terrace gravel (Holocene to middle Pleistocene)
- Qop Pinedale outwash gravel (upper Pleistocene)
- Qtp Pinedale Till (upper Pleistocene)
- Qtb Bull Lake Till (middle Pleistocene)
- Qdf Debris-flow deposits (upper to lower? Pleistocene)*
- Qgo Older outwash gravel (middle or lower Pleistocene)
- QTd Diamicton (middle Pleistocene to Pliocene?)

QTgm Bouldery gravel of Mesa Cortina (“Buffalo placers”) (middle Pleistocene to Pliocene?)

QTls Older landslide deposits (middle? Pleistocene to Pliocene?)

Kp Pierre Shale, undivided (Upper Cretaceous)

*Kpm Shale and sandstone member*

*Kps Sandstone member*

*Kpl Lower shale member*

Kn Niobrara Formation (Upper Cretaceous)

Kb Benton Shale (Upper Cretaceous)

Kd Dakota Sandstone (Lower Cretaceous)

Jm Morrison Formation (Upper Jurassic)

JIPu Entrada Sandstone (Middle Jurassic), Chinle Formation (Upper Triassic), and Maroon Formation (Lower Permian to Middle Pennsylvanian), undivided

Proterozoic rocks

[Grain sizes for both plutonic and metamorphic rocks follow Compton (1962): *fine-grained*, less than 1 mm; *medium-grained*, 1-5 mm; and *coarse-grained*, greater than 5 mm.]

YXu Middle? and Early Proterozoic rocks, undivided—Shown only in cross sections

YXp Pegmatite (Middle? and Early Proterozoic)

YXpg Pegmatite and granite complex (Middle? and Early Proterozoic)

YXggp Granitic rocks, biotite gneiss, and pegmatite, undivided

(Middle? and Early Proterozoic)

Rocks of the Routt Plutonic Suite (Early Proterozoic)

*Xgr Granodiorite and quartz monzonite*

*Xdi Diorite and quartz diorite*

Xmg Migmatite (Early Proterozoic)

Xbg Biotite gneiss (Early Proterozoic)

Xkbg Microcline-biotite gneiss (Early Proterozoic)

Xbmg Biotite-muscovite gneiss and schist (Early Proterozoic)

Xsg Biotite-muscovite-sillimanite gneiss and schist (Early Proterozoic)

Xam Amphibolite (Early Proterozoic)

Xqz Quartzite (Early Proterozoic)

#### SYMBOLS ON MAP

**Contact**—Dashed where approximately located; dotted where concealed

**Normal fault**—Dashed where approximately located; dotted where concealed Bar and ball on down thrown side. Dip of fault plane shown where known

**Thrust fault**—Dashed where approximately located; dotted where concealed. Teeth on upper plate. Dip of fault plane shown where known

**Anticline or antiform**—Showing trace of axial plane. Dotted where concealed

**Syncline or synform**—Showing trace of axial plane. Dotted where concealed

**Strike and dip of beds**

**Inclined**

**Strike and dip of foliation**

**Inclined**

**Vertical**

**Strike and dip of foliation and bearing and plunge of lineation—**

Lineation defined by aligned mineral grains, mullion structures, and small fold axes. In most cases, lineation interpreted to be stretching direction during ductile deformation

**Scarp**—Linear zone of steepening associated with downslope creep.

Represents insipient landslide scarp

**Sackung structure**—Scarp (commonly facing upslope), trench, or prominent fracture associated with gravitational spreading of entire mountain range (Varnes and others, 1989)

**Uranium-lead age from zircon**—Granite sample D96-180 ( $1725 \pm 2$  Ma), pegmatite sample D95-2A ( $1605 \pm 125$  Ma) (D.M. Unruh, unpub. data, 1997)

**Fluorite prospect**