



BEDROCK GEOLOGIC MAP AND SECTION OF THE KASSLER QUADRANGLE, JEFFERSON AND DOUGLAS COUNTIES, COLORADO

EXPLANATION

PERIOD	SYMBOL	DESCRIPTION
CRETACEOUS AND TERTIARY	TKda	Dawson arkose Brown and white arkosic conglomerate and sandstone with green, gray, and red clayey shale
	Kl	Laramie formation Brown and white sandstone and olive-gray shale with nodular limonite beds
	Kfh	Fox Hills sandstone Fine-grained crossbedded yellowish-gray sandstone and olive-gray clayey shale with thick limonite beds at base
	Kp	Pierre shale Olive-gray marine clayey shale with thin sandstone beds near the top. Kph, Haynes sandstone member near middle—dusky-yellow thin-bedded friable sandy shale. Baculite zones and phosphatic nodule layer shown by red lines
	Kns	Niobrara formation Kns, Smoky Hill shale member, yellowish-gray calcareous silty shale with thin grayish-yellow limestone beds in middle and at top Knt, Fort Hays limestone member, yellowish-gray thick-bedded marine limestone
	Kcg	Carlisle shale, Greenhorn limestone, and Graneros shale Black marine shale and light-gray limestone, with a thin calcareous bed at the top
	Ksl	South Platte and Lytle formations Yellowish-brown and grayish-orange massive crossbedded sandstone with lenticular clay beds near the middle and local conglomerate and quartzite beds near the base
	Jm	Morrison formation Variegated silty shale with thin limestone and sandstone beds
	Jrc	Ralston Creek formation Light-gray silty limy shale with gray limestone beds containing jaggers. Includes Entrada (?) sandstone equivalent
	Jpib	Lykins formation Tpis, Strain shale member of LeRoy, moderate reddish-brown silty shale member Plg, Glenn limestone member of LeRoy, grayish orange-pink sandy limestone Pib, Bergen and Harriman shale member of LeRoy and/or equivalent, moderate reddish-brown shale and siltstone with thin limestone bed
Ply	Lyons sandstone Yellowish-gray to pale-red crossbedded sandstone with limonite nodules	
Ppf	Fountain formation Moderate reddish-brown arkosic conglomerate with thin dark reddish-brown silty shale beds	
Cs	Sandstone dikes Pale-brown fine-grained quartzitic sandstone or more rarely pale-olive glauconitic (?) sandstone along Precambrian faults	
IGNEOUS AND METAMORPHIC ROCKS	Tr	Rhyolite Light-gray aphanitic to slightly porphyritic dike, intruded into Precambrian rocks
	Ka	Andesite Black to dark olive-gray slightly porphyritic dikes, intruded into Precambrian rocks
	Gp	Granite pegmatite Pegmatite dikes, some containing muscovite, tourmaline, apatite, garnet, and beryl. Circles indicate tourmaline-bearing pegmatites
	DDP	Pikes Peak granite DPE, coarse-grained moderate reddish-orange granite composed of microperthite, quartz, and biotite DDP, granite pegmatite, crystal-lined microplitic cavities, veinlike pegmatites, and pegmatized border zone
	gb	Biotite-muscovite granite Pale-red fine- to medium-grained biotite muscovite granite with aligned crystals of microcline and biotite; medium-grained facies is seriate porphyritic; and fine-grained albitic facies is moderate orange-pink equigranular or locally porphyritic granite, quartz monzonite, or granodiorite
	qd	Quartz diorite and hornblende Medium-gray medium- to coarse-grained equigranular rock or augen gneiss that weathers to rounded masses. Composed essentially of plagioclase, quartz, and biotite. Also includes massive to well-layered hornblende
	ss	Gneissic granite Gray or pink medium-grained porphyroblastic rock, gneissic in places. Weathers to rounded masses
	gpnh	Hornblende granite gneiss Mottled grayish orange-pink and dark greenish-gray fine-grained gneiss with coarse-grained segregations of epidote, hornblende, and diopside. Composed mostly of quartz, microcline, and hornblende. Grades into amphibolite
	ggnis	Sillimanite granite gneiss Dark grayish-brown fine-grained gneiss streaked with bundles of dark-gray sillimanite crystals. Composed of microcline, quartz, sillimanite, and magnetite. Contains many tourmaline-bearing pegmatites
	gnis	Granite gneiss and migmatite Grayish-orange medium-grained well-foliated gneiss composed of quartz, microcline, and biotite. Ranges in composition from alaskite to monzonite. Contains abundant pegmatite and thin layers of biotite-quartz gneiss, amphibolite, and lime silicate gneiss
am	Lime silicate gneiss Coarse-grained waxy gneiss containing many well-crystallized minerals in irregular-shaped lenticular bodies. Epidote, garnet, and quartz are the predominant minerals	
gnis	Amphibolite Mottled light-gray and greenish-black even-grained, generally gneissic. Composed principally of hornblende, enstatite, quartz and biotite	
gn	Biotite-quartz gneiss Mottled light-gray to black medium-grained gneiss consisting mainly of quartz, biotite, and plagioclase	
gns	Sillimanitic biotite-quartz gneiss Yellowish-gray thinly foliated to massive felted-appearing gneiss. Consists mainly of sillimanite, biotite, quartz, and magnetite	
qz	Quartzite Gray fine-grained weakly stratified rock, not foliated	
STRUCTURAL FEATURES	Contact	Dashed where inferred or gradational, dotted where concealed; generally accurate within 80 feet
	Fault, showing dip	Dashed where approximately located; short dashed where inferred; U, upthrown side; D, downthrown side. Arrows show direction of relative movement
	Probable fault	
	Fault zone, showing gouge	
	Probable syncline, approximately located	Showing trace of axial plane and bearing and plunge of axis
	Plunge of minor anticline	
	Plunge of minor syncline	
	Strike and dip of beds	
	Strike and dip of overturned beds	
	Strike of vertical beds	
Horizontal beds		
Bearing and plunge of slickensides		
Strike and dip of foliation		
Strike of vertical foliation		
Strike and dip of fracture cleavage		
Bearing and plunge of lineation		
Horizontal lineation		
Planar and linear symbols may be combined		
Strike and dip of joints		
Vein, showing dip		
Vertical shaft		
Inclined shaft		
Adit		
Prospect pit		
Quarry or open-pit clay mine		
Fossil leaf locality		
Invertebrate fossil locality		
Numbers signify collections described in report		

Base map by Topographic Division
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Geology by Glenn R. Scott,
1950, 1955, and 1956