



CORRELATION OF MAP UNITS

Qal	Qc	Qf	Qla	Holocene and Pleistocene	QUATERNARY
Qg					
Tgr				Eocene	TERTIARY
Tw				Paleocene	
TKe					
Keh					
Kav					
Kal					
Kh				Upper Cretaceous	
Kc					CRETACEOUS
Kf	Kfu				
Kbr				Lower Cretaceous	
Kg					
Jt				Middle Jurassic	JURASSIC
Jbn					JURASSIC(?) AND TRIASSIC(?)
Ba				Upper Triassic	
Ta					
Tb				Lower Triassic	TRIASSIC
Tw					
Ppu					PERMIAN
Ppm					
PPMw					PERMIAN, PENNSYLVANIAN, AND MISSISSIPPIAN

DESCRIPTION OF MAP UNITS

SURFICIAL DEPOSITS (HOLOCENE)

Qal	Alluvium
Qc	Colluvium
Qf	Alluvial fan deposits
Qls	Landslide deposits and mudflows
Qg	GRAVEL (HOLOCENE AND PLEISTOCENE)--Cobble-gravel to silt-size particles in lag concentrates overlying parts of Hilliard Shale and Adaville Formation; derived predominantly from Hams Fork Conglomerate Member of Evanstone Formation
Tgr	GREEN RIVER FORMATION (EOCENE)--White-weathering marlstone, calcareous siltstone, and claystone. 400+ ft thick
Tw	WASATCH FORMATION (EOCENE AND PALEOCENE)--Red, maroon, yellow, and gray mudstone, and yellow, brown, and gray fine- to coarse-grained sandstone. Sequence contains some stream-channel conglomerate beds containing boulders, cobbles, and pebbles of quartzite, chert, and limestone. As much as 2,000 ft thick
TKe	EVANSTON FORMATION (PALEOCENE AND UPPER CRETACEOUS)--Gray siltstone, carbonaceous claystone, shaly mudstone, quartzitic siltstone, gray carbonaceous sandstone, and some dark-brown concretionary ironstone. 200+ ft thick
Keh	HAMS FORK CONGLOMERATE MEMBER (UPPER CRETACEOUS)--Boulder-conglomerate beds containing small boulders, cobbles, and pebbles of well-rounded quartzite, chert, limestone, and interbedded white to brown calcareous sandstone. As much as 1,000 ft thick
Kav	ADAVILLE FORMATION (UPPER CRETACEOUS)--Predominantly a gray-brown-weathering carbonaceous shale and mudstone that contains beds of yellowish-brown to reddish-brown sandstone and siltstone; contains minable coal beds in lower part. 2,000+ ft thick
Kal	Lazear Sandstone Member--Light-gray to white fine- to coarse-grained sandstone; basal part of formation. 200-400 ft thick
Kh	HILLIARD SHALE (UPPER CRETACEOUS)--Dark-gray to dark-brown marine shale, siltstone, and sandy shale; contains a few conspicuous light-gray to light-tan fine-grained resistant sandstone beds in upper part. About 6,000 ft thick
Kc	CONGLOMERATE (UPPER CRETACEOUS)--Conglomeratic sequence that contains a massive conglomerate in middle part, grading into mudstone, shale, and buff-weathering sandstone above and below; shales in upper part contain marine microfossils. 2,000+ ft thick
Kf	FRONTIER FORMATION UNDIVIDED (UPPER CRETACEOUS)
Kfu	Upper unit--Middle part consists of a prominent hogback of white to light-gray-weathering, oyster-bearing sandstone (Oyster Ridge Sandstone Member) overlain by shale and thin beds of gray sandstone that contain Kemmerer coal zone; underlain by a thick shale interval that contains Willow Creek coal zone in Kemmerer area. About 1,200 ft thick
Kfl	Lower unit--Dark-gray shale, tan siltstone, and brown sandstone; sandstone beds less resistant than those in upper unit; contains Spring Valley coal zone in lower part. About 1,000 ft thick

Jbn	BEAR RIVER FORMATION (LOWER CRETACEOUS)--Black to dark-gray fissile shale and olive- to tan weathering fine-grained sandstone; contains a few thin fossiliferous limestone beds. 500-600 ft thick
Ba	GANNETT GROUP (LOWER CRETACEOUS)--Predominantly red to purplish-red shale and siltstone; contains a few brownish-gray sandstone and quartzite beds; upper part is light-gray fine-grained white-weathering limestone, possibly correlative with Draney Limestone, Bechler Formation, and Peterson Limestone; at base a massive coarse-grained sandstone probably correlative with Ephraim Conglomerate. About 500 ft thick
Jt	TWIN CREEK LIMESTONE (MIDDLE JURASSIC)--Mainly light-gray shaly limestone that contains oyster beds in upper part; shaly limestone beds characteristically fracture into pencil-shaped fragments on dip slopes; basal red unit (Cypsum Spring Member). 700-800 ft thick, but may be tectonically thinned in eastern part of quadrangle
Jbn	NUGGET SANDSTONE (JURASSIC? AND TRIASSIC?)--Light-tan to reddish-orange very fine grained ridge-forming quartz sandstone. 500-600 ft thick
Ba	ANKAREH SHALE (UPPER AND LOWER TRIASSIC)--Red to reddish-purple calcareous siltstone and shale and scattered interbeds of gray and pinkish-gray aphanitic limestone. About 500 ft thick
Ta	THAYNES FORMATION (LOWER TRIASSIC)--Interbedded greenish- to yellowish-gray-weathering fine-grained sandstone and siltstone, and light-gray to brownish-gray medium- to thick-bedded limestone. 1,000-1,200 ft thick
Tw	WOODSIDE FORMATION (LOWER TRIASSIC)--Reddish-brown shale, siltstone, and fine-grained sandstone; poorly exposed. About 400 ft thick
Td	DINWOODY FORMATION (LOWER TRIASSIC)--Mainly brownish-gray to light-brown shale and siltstone with interbeds of bluish-gray silty limestone. 400-500 ft thick
Ppu	PHOSPHORIA FORMATION AND EQUIVALENT UNITS (PERMIAN)
Ppm	Upper part--Includes: Retort Phosphatic Shale Member of Phosphoria Formation, mainly dark-brownish-gray mudstone, shale, and siltstone, and a few beds of phosphorite; Franson Member of Park City Formation, light-gray aphanitic dolomite; Shedhorn Sandstone, brownish-gray fine-grained quartz sandstone. About 122 ft thick
PPMw	Heade Peak Phosphatic Shale Member of Phosphoria Formation--Non-resistant thin-bedded dark unit of phosphorite, mudstone, and carbonate rock. About 54 ft thick
PPMw	WELLS FORMATION AND ASSOCIATED ROCKS (PERMIAN, PENNSYLVANIAN, AND MISSISSIPPIAN)--Upper part: light-gray to buff well-sorted quartzitic sandstone and minor interbeds of limestone and dolomite; forms conspicuous cliffs and coarse talus; uppermost 10-20 ft is white aphanitic dolomite, in part correlative to Lower Permian Grandeur Member of Park City Formation. Lower part: thin-bedded gray limestone and cherty dolomite underlain by red shale, siltstone, and pink quartzite sandstone, in part correlative to Amaden Formation. Total thickness 800-1,000 ft

③ 440	COAL BED--Dashed where approximately located. Thickness of coal, in feet, measured at triangle. Circled number refers to measured coal section
---	CONTACT--Dashed where approximately located; short dashed where inferred
---	FAULT--Dashed where approximately located; short dashed where inferred; dotted where concealed. U, upthrown side; D, downthrown side. Arrows show relative horizontal displacement
---	THRUST FAULT--Dashed where approximately located; short dashed where inferred; dotted where concealed. Sawteeth on upper plate
---	GRAVITY FAULT--Open sawteeth mark slip surface of large block of Frontiers Formation; length and curvature of arrows indicate direction of greatest movement and rotation
---	SLUMP FAULT--Hachures on downthrown side
---	ANTICLINE--Showing trace of axial plane. Dashed where approximately located; short dashed where inferred
---	OVERTURNED ANTICLINE--Showing trace of axial plane. Dashed where approximately located; short dashed where inferred; dotted where concealed
---	SYNCLINE--Showing trace of axial plane. Dashed where approximately located; short dashed where inferred; dotted where concealed
---	OVERTURNED SYNCLINE--Showing trace of axial plane. Dashed where approximately located; short dashed where inferred; dotted where concealed
---	STRIKE AND DIP OF BEDS
65	Ta
75	Vertical
U	Overturned
---	PHOSPHATE TRENCH
◇	ABANDONED OIL AND GAS TEST HOLE

1 foot = 0.3048 meters

Geology mapped 1975-76.
Coal beds mapped and measured
by R. A. L. unceford

GEOLOGIC MAP AND COAL SECTIONS OF THE ELKOL SW. QUADRANGLE, LINCOLN AND UINTA COUNTIES, WYOMING

By
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