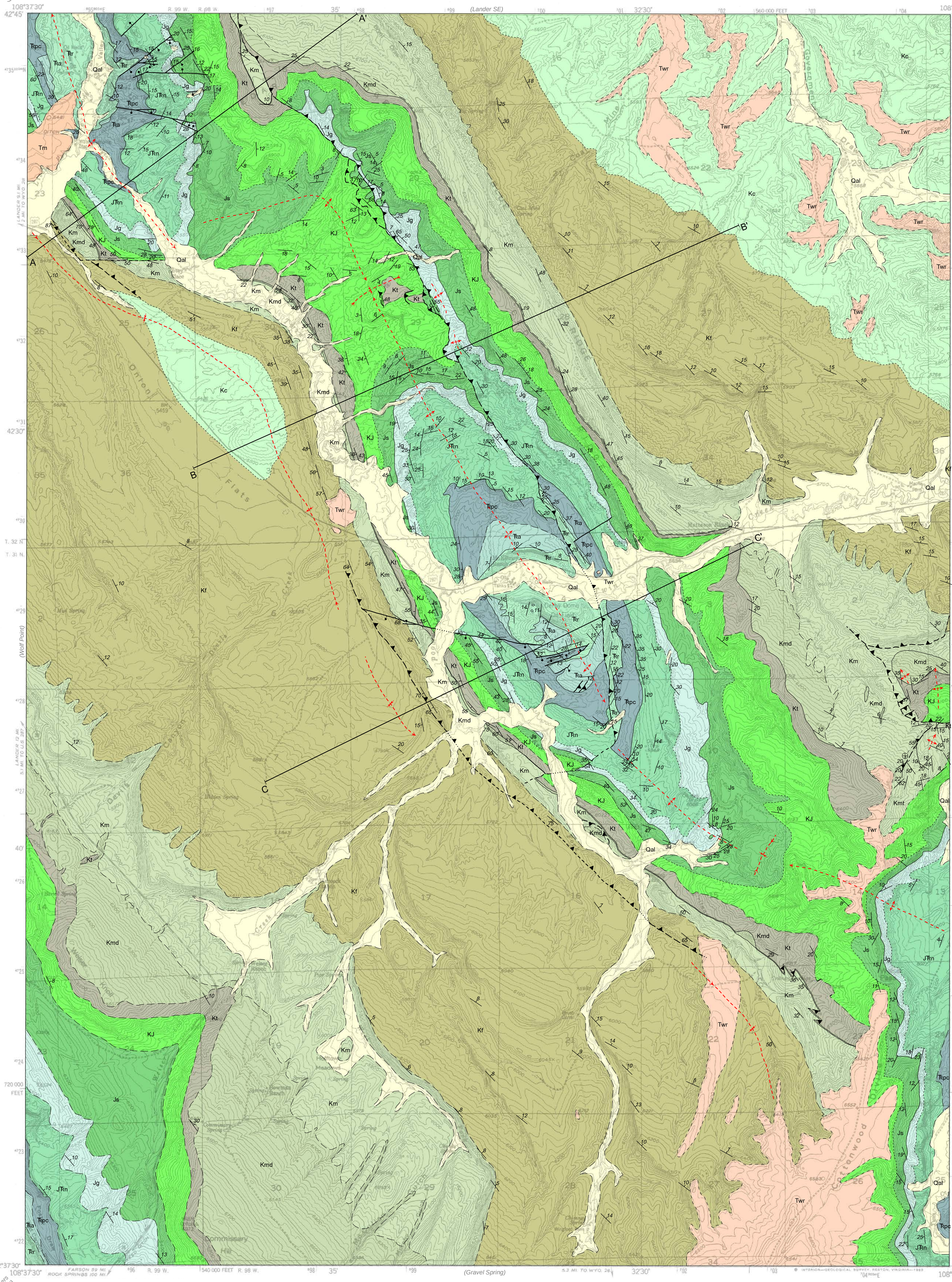
WYOMING STATE GEOLOGICAL SURVEY
Ronald C. Surdam, State Geologist
Laramie, Wyoming

Geology - Interpreting the past to provide for the future

USGS science for a changing world — **Prepared in cooperation with the U.S. GEOLOGICAL SURVEY**

MAP SERIES 80
Weiser Pass 1:24,000 - scale Geologic Map



Base map from U.S. Geological Survey 1:24,000-scale topographic map of the Weiser Pass, Wyoming Quadrangle, 1959

Projection: Universal Transverse Mercator (UTM), zone 12
North American Datum of 1927 (NAD 27)
10,000-foot grid ticks:Wyoming State Plane Coordinate System, East Central zone

A digital version of this map is also available on CD-ROM.

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GN MN
1° 39'
29 MILS
15°
267 MILS

UTM GRID CONVERGENCE (GN)
1978 MAGNETIC DECLINATION (MN) AT CENTER OF SHEET
DIAGRAM IS APPROXIMATE

SCALE 1:24,000

1 0.5 0 1 Mile

1,000 0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 Feet

1 0.5 0 1 Kilometer

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Prepared in cooperation with the U.S. Geological Survey, National Cooperative Mapping Program, under Cooperative Agreement Numbers 98HQAG2071 and 04HQAG0045

Digital cartography by Alice J. Vogelmann and Robin W. Lyons

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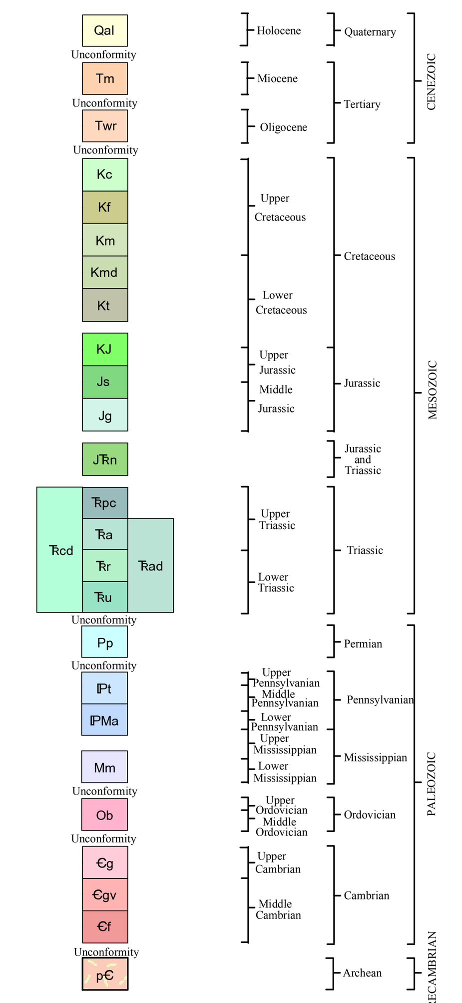
GEOLOGIC MAP OF THE WEISER PASS QUADRANGLE, FREMONT COUNTY, WYOMING

by
Christopher G. Brocka and Robert L. Bauer
2008

QUADRANGLE LOCATION

EXPLANATION

CORRELATION OF MAP UNITS



MAP SYMBOLS

Contact—Solid where certain, long dashes where approximately located, medium dashes where inferred (poorly exposed), short dashes where gradational between formations

Normal Fault—Dotted where concealed beneath younger units; ball and bar on downthrown block

Tear fault—Approximately located, dotted where concealed beneath younger units; arrows indicate apparent direction of motion

R

Reverse fault—Approximately located, dotted where concealed beneath younger units; R indicates upthrown block

Thrust fault—Solid where certain, long dashes where approximately located, short dashes where inferred, and dotted where concealed beneath younger units; sawteeth on overriding (upthrown) block

18

Antiform—Trace of axis approximately located; arrowheads at end of lines indicate direction(s) of plunge

Synform— Trace of axis approximately located; arrowheads along or at ends of lines indicate direction(s) of plunge

A A'

Line of structural cross section

75

Strike and dip of beds

87

Strike and dip of overturned beds

⊕ **Horizontal beds**

DESCRIPTION OF MAP UNITS

Quaternary surficial deposits

Qal — **Alluvium (Holocene)**—Recently weathered material that was deposited with some identifiable stratification; variable thickness

Cenozoic sedimentary rocks

Tm — **Miocene rocks undifferentiated (Miocene)**—conglomerate; forms terraces along the Little Popo Agie River

Twr — **White River Formation (Eocene)**—Present along ridges creating armored surfaces; basal conglomerate of very poorly sorted Precambrian, Paleozoic, and Mesozoic boulders with poorly sorted sand-gravel size matrix with cross stratification

Upper Cretaceous sedimentary rocks

Kc — **Cody Shale**—Light gray fine-grained sandstone and siltstone, poorly lithified, forms badland-type topography; upper part eroded, only 100 feet (30 m) exposed

Kf — **Frontier Formation**—Light green fine- to medium-grained quartz sandstone with few lithic fragments; interlain with beds of fossil-rich siltstone and shale. White siltstone with soft gray-black bentonite-rich shale at base; lower contact defined by the appearance of the first non-siliceous sandstone unit overlain by white siltstones. Thickness 1,000 feet (300 m)

Km — **Mowry Shale**—Silver-gray to white, hard, siliceous, thinly laminated siltstone and interbedded thin sandstone; grades downward into interbedded fissile tan/brown siltstone and sandstone near base. Upper shale beds contain bentonite concentrations. Thickness approximately 450 to 500 feet (140 to 150 m)

Kmt — **Thermopolis Shale, Muddy Sandstone, and Mowry Shale undifferentiated (Upper and Lower Cretaceous)**—Amalgamated by faulting and internal deformation making identification of individual units tedious and often impossible

Lower Cretaceous sedimentary rocks

Kmd — **Muddy Sandstone**—Hard hematite-cemented fine- to medium-grained dirty quartz sandstone; thickness approximately 25 to 50 feet (8 to 15 m)

Kt — **Thermopolis Shale**—Dark brown/black shale near top grades into light tan/brown siltstone and sandstone in lower part; underlain by basal rust-stained sandstone; thickness approximately 150 feet (46 m)

KJ — **Morrison and Cloverly Formations undivided (Lower Cretaceous and Upper Jurassic)**—Terrestrial deposits of alluvial fans, braided or meandering streams, and lakes; approximately 350 feet (110 m) thick

Cloverly Formation (Lower Cretaceous)—Variegated maroon, green, and red claystone and siltstone underlain by stream-laid gravel at base

Morrison Formation (Upper Jurassic)—Upper part is red, maroon, green, gray, and brown fine-grained claystone, mudstone, and siltstone beds with interspersed lenses of coarser channel sandstone; lower part poorly sorted silty sandstone with channels of coarse-grained cross-bedded sandstone

Js — **Sundance Formation (Middle and Upper Jurassic)**—Upper units are pale green glauconite-rich interbedded siltstone, sandstone, and limestone; upper contact is gradational and defined by the lack of glauconite in the basal Morrison sandstone. Lower units are reddish fine-grained quartz sandstone; basal transgressive sandstone unit is identified by mud rip-up clasts, quartz sand grains, and/or ooids; thickness approximately 250 feet (76 m)

Jg — **Gypsum Spring Formation (Middle Jurassic)**—Upper units have siltstones interbedded with evaporites and three distinctive limestone units; massive ledge-forming evaporates at base with interbedded Fe_2O_3 stained-red siltstone; gradational contact with Nugget sandstone defined by silt grains in the basal Gypsum Spring; approximately 150 to 200 feet (46 to 60 m) thick

JTRn — **Nugget Sandstone [(Jurassic (?) and Triassic (?)]**—Top part is pinkish/buff white in antiform culminations while Fe_2O_3-stained red on antiform limbs; composed of friable, fine-to-medium grained quartz sandstone beds which form cliffs of large scale cross-beds with moderately spaced thin laminations of red and gray siltstone. Middle part is friable, fine-grained sandstone. Lower part is Fe_2O_3-stained red siltstone and resistive thinly bedded sandstone. Thickness is approximately 470 feet (140 m)

TRcd — **Chugwater Group and Dinwoody Formation undivided (Triassic)—**Shown on Cross sections A-A′ and B-B′; total thickness approximately 1,060 feet (323 m)

Chugwater Group (Triassic)—Composed of four members with a total thickness of approximately 1,000 feet (300 m)

TRpc — **Popo Agie Formation and Crow Mountain Sandstone undivided**—combined thickness approximately 100 feet (30 m)

Popo Agie Formation—Purplish-red mixture of claystone and fine-grained sandstone of lacustrine origin. Upper contact is mustard or ocher-yellow and has calcareous concretions

Crow Mountain Sandstone—Fe_2O_3-stained red fine-grained sandstone

TRa — **Alcova Limestone**—Gray/blue micritic limestone with large stromatolites; resistive to weathering and forms large hogback dip slopes. Approximately 8 to 10 feet (2.4 to 3 m) thick

TRr — **Red Peak Formation**—Fe_2O_3-stained red interbedded fine grained sandstone and shale that contain large bluffs of sandstone outcrops; thickness approximately 900 feet (270 m)

TRad — **Lower Chugwater Group and Dinwoody Formation undivided (Triassic)—**Shown on Cross section C-C′ only; includes Alcova Limestone, Red Peak, and Dinwoody formations; total thickness approximately 970 feet (295 m)

TRu — **Dinwoody Formation (Triassic)**—In subsurface only; red siltstone, buff tan/white dolomitic sandstone, and greenish shale; approximately 60 feet (20 m) thick

Pp — **Park City/Phosphoria formations undivided (Permian)**—In subsurface only; mixture of grayish-tan slightly dolomitic carbonates with interdispersed mudrock, chert, and two thin layers of phosphates; approximately 250 feet ((76 m) thick

IPt — **Tensleep Sandstone (Upper and Middle Pennsylvanian)**—In subsurface only; tan to white, porous, friable, fine- to medium-grained mature quartz arenite with large scale cross-beds and intercalated carbonate layers; contains intense soft sediment deformation, creating large convoluted bed structures. Thickness approximately 400 feet (120 m)

IPMa — **Amsden Formation (Middle and Lower Pennsylvanian and Upper Mississippian)**—In subsurface only; interbedded reddish shale and limestone that interfinger with the overlying Tensleep Sandstone. Darwin Sandstone at base is a reddish, mature cross-bedded sandstone. Approximately 150 feet thick (46 m)

Mm — **Madison Limestone (Mississippian)**—In subsurface only; upper part is cavernous and commonly filled with collapse breccia and reddish mud; most of formation is bluish-gray, massive limestone that has been largely dolomitized in this region with abundant cherty layers. Approximately 400 feet (120 m) thick

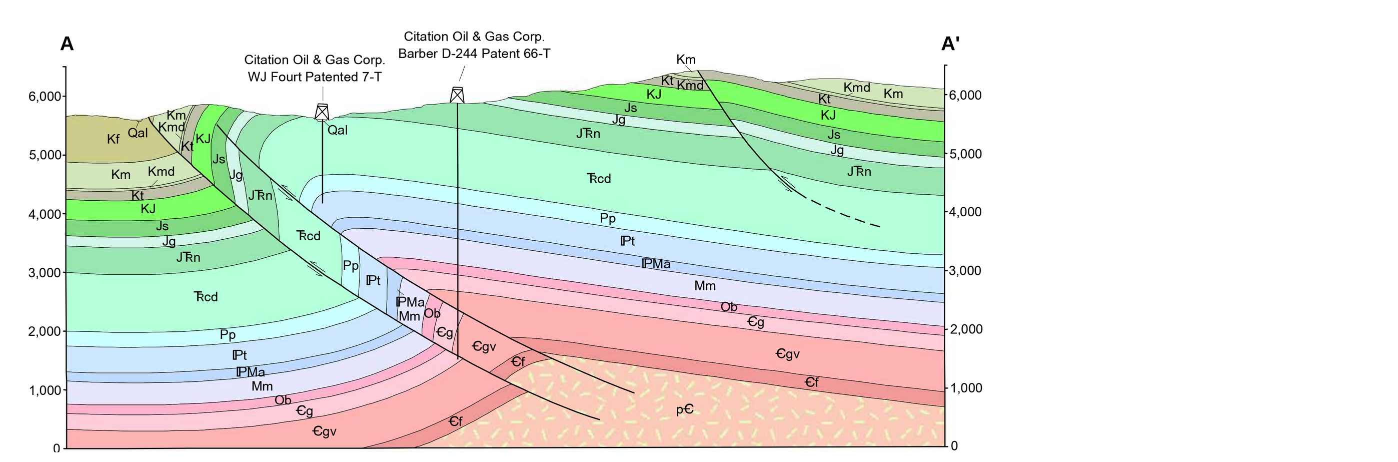
Ob — **Bighorn Dolomite (Upper and Middle Ordovician)**—In subsurface only; Steamboat Point Member at top is a hard, massive siliceous grayish-white dolomite characterized by its rough or bumpy texture. Lander Sandstone Member at base is a quartz arenite. The upper part of the Bighorn Dolomite has been removed by erosion that also removed the overlying Silurian and Devonian rocks in this part of Wyoming. However, the Devonian Darby Formation, a thinly bedded sandstone and siltstone that overlies uneroded Bighorn in other parts of northwestern Wyoming, is interpreted to be absent or very thin in this study area. Total thickness approximately 150 feet (46 m)

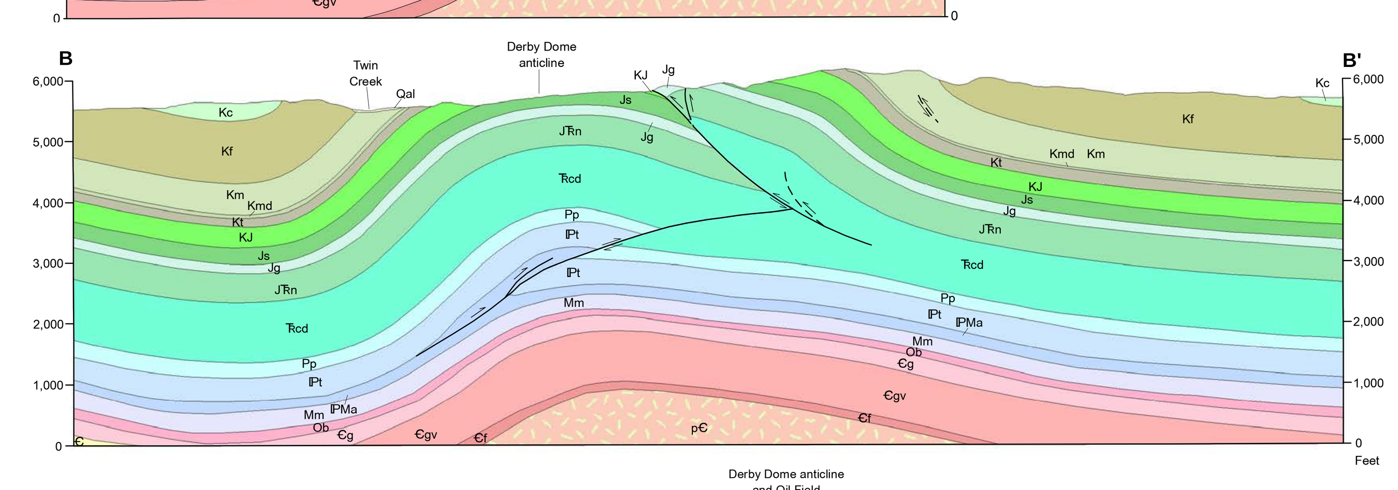
€g — **Gallatin Limestone (Upper Cambrian)**—In subsurface only; bedded limestone and dolostone; upper Open Door Member is a micritic limestone with microbial laminations and a layer of greenish and reddish clasts below its upper boundary. Lower DuNoir Member displays oolitic and glauconitic material. Basal few centimeters is an imbricated intra-formational flat-pebble conglomerate. Thickness is approximately 275 feet (84 m)

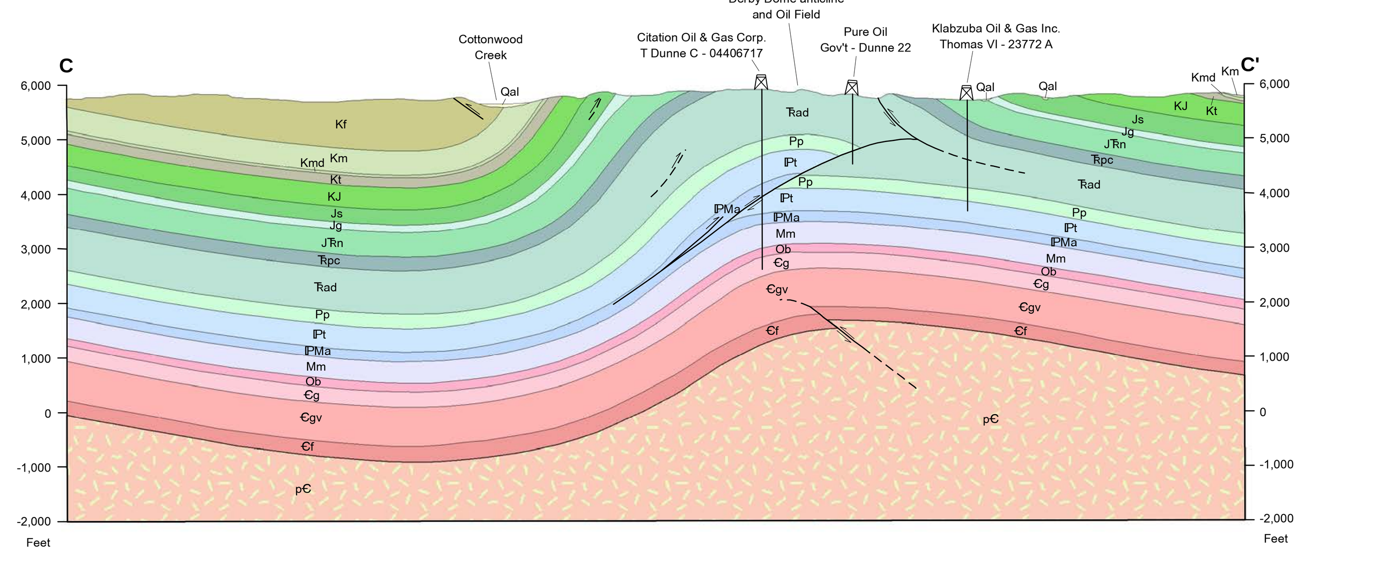
€gv — **Gros Ventre Formation (Middle Cambrian)**—In subsurface only; pale-green glauconitic shale interbedded with slabby fine grained sandstone; grades up section into clastic limestone containing ooids and conglomerate; common trace fossils of the *Rusophycos* and Cruziana; thickness approximately 700 feet (210 m)

€f — **Flathead Sandstone (Middle Cambrian)**—In subsurface only; reddish to maroon medium-grained slightly arkosic quartz sandstone; localized zones of shale. Upper unit is a submature coarse-to-fine grained orthoquartzite that grades into interbedded fine-grained sandstone, clay rich sandstone, siltstone, and shale; cross-stratified at base with large sandstone channels. Thickness approximately 250 feet (76 m)

p€ — **Crystalline and metamorphic rocks undivided (Precambrian)**—In subsurface only; basement rocks composed of migmatite, schist, and granitic gneiss that have been intruded by younger granite







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