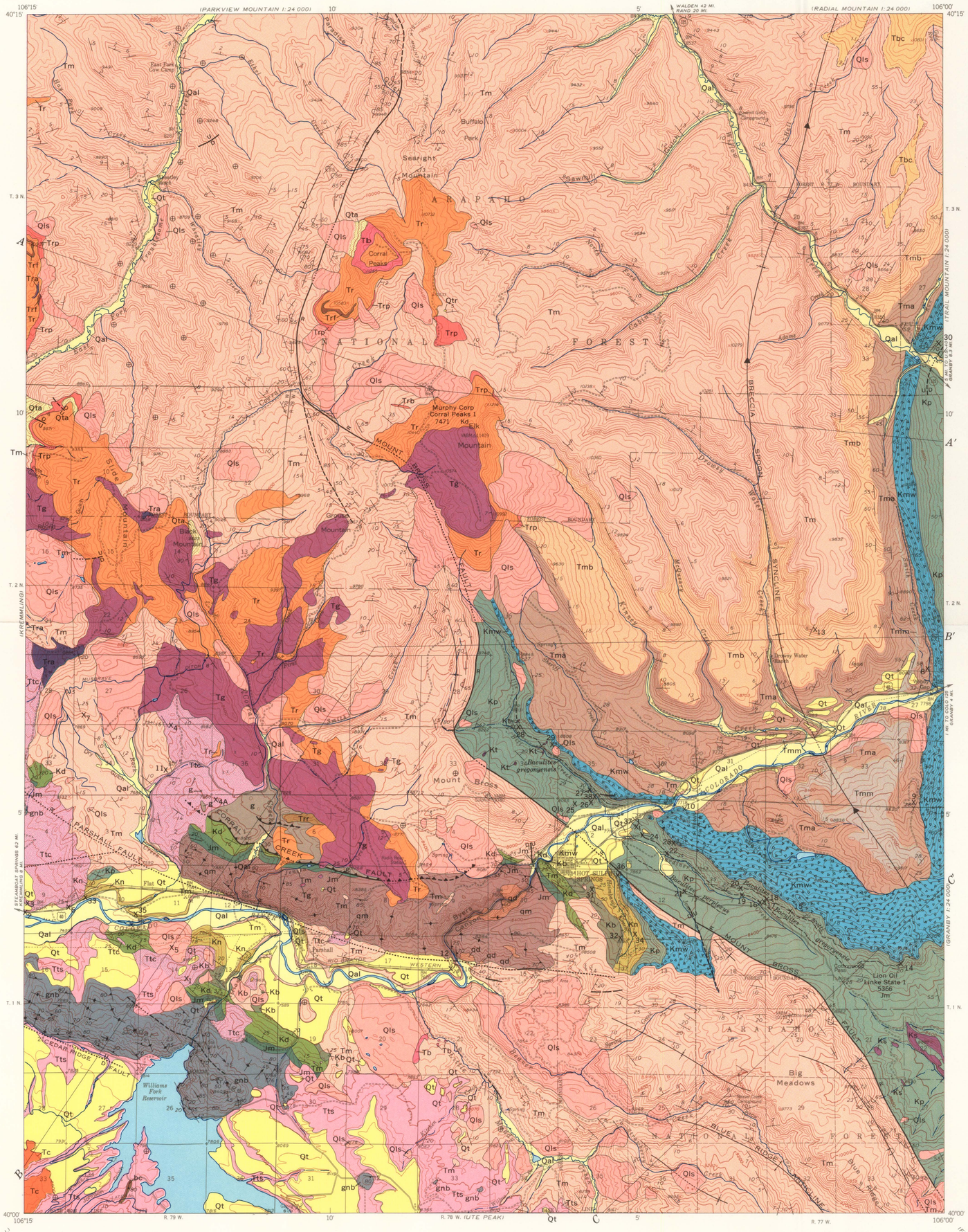


Base by U.S. Geological Survey, 1957
Williams Fork Reservoir shoreline as of 1965

APPROXIMATE MEAN DECLINATION, 1968
TRUE NORTH
MAGNETIC NORTH
14°

SCALE 1:62 500

1 ½ 0 1 2 3 4 MILES

1 .5 0 1 2 3 4 KILOMETERS

CONTOUR INTERVAL 80 FEET
DATUM IS MEAN SEA LEVEL

Geology by G. A. Izett, A. A. Wanek, D. L. Hoover, and C. S. V. Barclay; assisted by R. R. Cunningham, W. H. Laraway, and A. M. Thompson, 1961–1964

EXPLANATION

QUATERNARY

Pleistocene and Recent

Qal — Alluvium

Qls, Qta — Landslide and talus deposits
Qls, *landslide deposits*
Qta, *talus deposits*

Qt — Terrace deposits

Qtr — Travertine

Pliocene

Tc — Conglomerate and mudstone
Unconsolidated conglomerate intercalated with beds of reddish-brown sandy mudstone and sandstone

Pliocene(?)

Tbc — Boulder conglomerate of Gravel Mountain
Ill-sorted unconsolidated deposits of gravel that contain well-rounded boulders of pink granitic Precambrian rock as much as 14 feet in diameter

Tg — Grouse Mountain Basalt
Dark-gray to black olivine-bearing basalt flows and intercalated tuffaceous sediments

Tb — Basalt plugs, dikes, and sills
Dark-gray to black locally splintery olivine-bearing basalt; some dikes and plugs probably feeders for Grouse Mountain Basalt

Miocene

Tts, Ttc — Troublesome Formation
Tts, *siltstone facies; moderate-grayish-orange to gray, light-brown, and light-green tuffaceous clayey siltstone; locally calcareous*
Ttc, *conglomeratic facies; varicolored tuffaceous swelling claystone and sandstone with lenses and stringers of conglomerate*

Oligocene and Miocene(?)

Tra, Trf, Tr, Trr, Trp, Trb — Rabbit Ears Volcanics
Tr, *varicolored tuff breccia and breccia intercalated with tuffaceous sediments*
Trf, *thin flows of biotite-, hornblende-, and pyroxene-bearing trachyandesite and porphyritic trachyandesite*
Tra, *tuff; nonwelded to slightly welded pink and gray quartz rhyolite ash flows with conspicuous crystals of quartz and sanidine*
Trr, *monolithologic breccia composed of light-brown-weathering porphyritic rhyolite with conspicuous phenocrysts of alkalic feldspar; locally makes up entire Rabbit Ears Volcanics*
Trp, *Pete Gulch Member; dark-brownish-gray porphyritic olivine-bearing trachybasalt flows; conspicuous phenocrysts of augite*
Trb, *trachybasalt dike; probably feeder for trachybasalt flows*

Paleocene

Tmb, Tm, Tmm, Tma, Kmw — Middle Park Formation
Tm, *Middle Park Formation, upper part*
Tmb, *varicolored arkosic conglomerate, grit, and sandstone intercalated with micaceous soft mudstone; ridge-forming conglomerate near top; conglomerate rich in fragments of granitic Precambrian rocks; shown only in Breccia Spoon syncline*
Tma, *dark-greenish-gray to dark-brown dirty arkosic conglomerate, grit, and sandstones rich in fragments of porphyritic andesite; intercalated with dark micaceous volcanic mudstones; locally contains impure coal beds near base; shown only in Breccia Spoon syncline*
Tmm, *breccia of Marietta Creek; medium- to dark-purplish-gray breccia composed of porphyritic andesite and trachyandesite; intercalated with volcanic siltstone, sandstone, and conglomerate; occurs only in Breccia Spoon syncline*
Kmw, *Windy Gap Volcanic Member; medium- to dark-purplish-gray volcanic breccia composed of porphyritic andesite and trachyandesite; poorly sorted and stratified; intercalated with volcanic conglomerate, sandstone, and siltstone; locally contains a few fragments of granitic Precambrian rock at base*

Upper Cretaceous(?)

Kt — Porphyritic trachyandesite
Dark gray, very fine grained; augite, biotite, and hornblende phenocrysts; occurs as dikes and plugs

Ks — Porphyritic augite syenite
Medium greenish gray, mottled, fine grained; occurs as dikes and plugs

Upper Cretaceous

Kp — Pierre Shale
Light-olive-gray subfissile clayey siltstone and silty claystone with local concentrations of silty limestone concretions; intercalated with a few conspicuous ledge-forming thin-bedded very fine grained siltstone and sandstone beds in upper part; medium- to dark-gray fissile to subfissile silty claystone, with a few calcareous siltstone concretions in lower part

CRETACEOUS(?)

CRETACEOUS

Upper Cretaceous

Kn — Niobrara Formation
Light- to dark-gray subfissile calcareous claystone, locally speckled in upper part; light-gray very thin bedded calcareous siltstone and impure limestone beds in lower part

Lower Cretaceous

Kb — Benton Shale
Medium- to dark-gray intercalated fissile silty claystone and clayey siltstone; carbonaceous; a few thin bentonite beds; topmost beds are very fine grained sandstone overlain by fossiliferous recrystallized limestone

Kd — Dakota Sandstone
Light-gray to light-brown very fine to fine-grained ripple-marked thin to very thick bedded even-bedded sandstone; locally conglomeratic; a few trails and borings of soft-bodied organisms in upper part; light-gray to light-brown lenticular conglomeratic sandstone and chert-pebble conglomerate in lower part

CRETACEOUS

Upper Jurassic

Jm — Morrison Formation
Green, greenish-gray, grayish-red structureless silty claystone intercalated with light-gray siltstone and sandstone; locally calcareous; a few thin discontinuous dense limestone beds; lenticular very fine grained sandstone near base

JURASSIC

qm — Quartz monzonite
Pink or grayish-pink fine- to medium-grained weakly foliated intrusive rock; generally contains a small percentage of biotite and muscovite. Includes some pegmatite and aplite. Generally contains large xenoliths of medium-grained well foliated quartz diorite similar to Boulder Creek Granodiorite and lenses of contorted migmatitic biotite gneiss; stippled where lenses of gneiss are dominant

Relative age uncertain

qd — Biotite-quartz diorite
Medium- to dark-gray mottled fine-grained intrusive rock; foliated near contacts, but interior parts of bodies are nearly massive; includes some pegmatite

bc — Boulder Creek Granodiorite
Gray medium-grained intrusive rock with scattered feldspar phenocrysts; locally grades into quartz diorite; commonly foliated; includes some pegmatite

gnb — Biotite gneiss
Gray fine- to medium-grained irregularly banded and contorted rock consisting of mica, quartz, and plagioclase; locally migmatized; local variations include quartz- and sillimanite-rich layers; intercalated with quartz monzonite gneiss and equigranular (quartz diorite) gneiss; thin hornblendite layers are rare; includes some pegmatite

g — Granite
Gray mottled medium-grained biotite-muscovite granite with scattered tabular microcline phenocrysts as much as 2 cm long; age relative to other Precambrian rocks in area not known

PRECAMBRIAN

Contact
Approximately located; short dashed where indefinite. Surficial deposits shown with solid lines are indefinite contacts

Fault
Approximately located; short dashed where inferred; dotted where concealed. U, upthrown side; D, downthrown side

Reverse fault
Approximately located; short dashed where inferred; dotted where concealed. R, upthrown side

Fault zone

Thrust fault
Approximately located; short dashed where inferred; dotted where concealed. Sawteeth on upper plate

Anticline
Showing crestline and bearing of axis. Approximately located; dotted where concealed

Syncline
Showing troughline and bearing and plunge of axis. Approximately located; dotted where concealed

Overturned syncline
Showing trace of axial plane and direction of dip of limbs. Approximately located; dotted where concealed

Strike and dip of beds

Strike and dip of overturned beds

Strike of vertical beds

Horizontal beds

Strike and dip of foliation

Strike of vertical foliation

Bearing and plunge of lineation

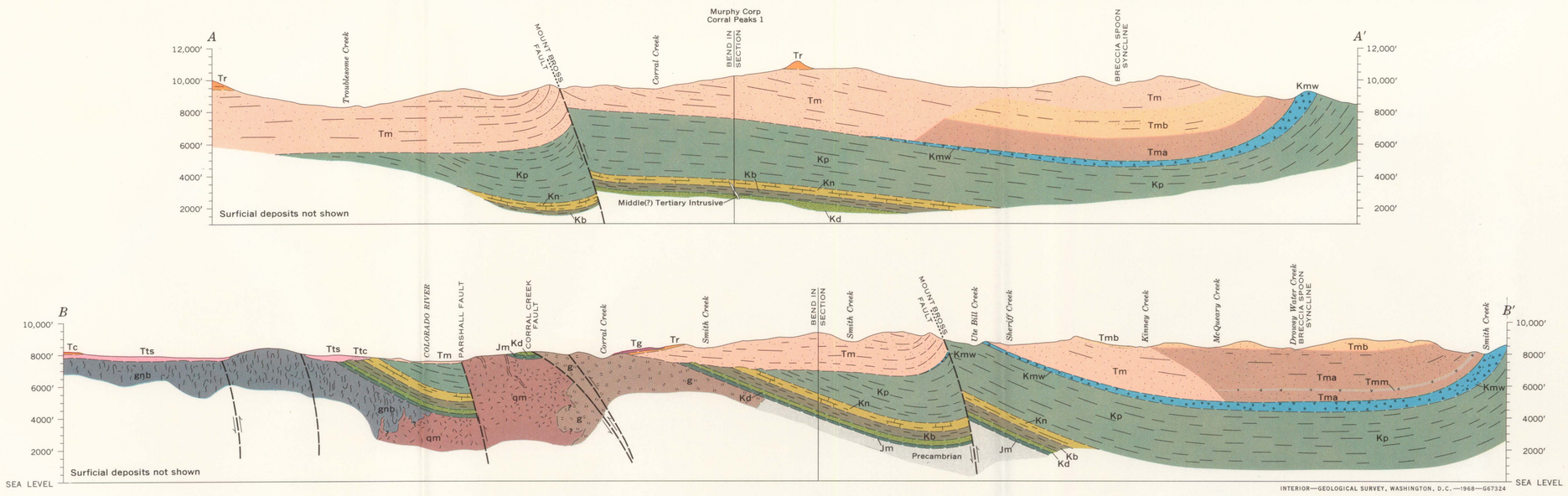
Bearing and plunge of minor fold axis
Includes drag folds, warps, crinkles, and crenulations

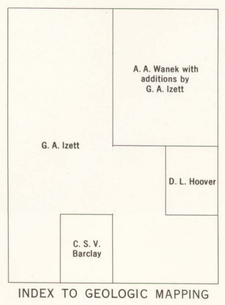
Fossil locality
U.S. Geological Survey collection, Denver catalogue. Number signifies collection described in this report

Ammonite zone in Pierre Shale
Zone line drawn through collections of ammonites; collections may not be at same horizon, and the line may rise or fall within an ammonite zone

Prospect pit

Dry hole
Name, total depth, and lowest formation penetrated shown by symbol





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