DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH
THE GEOLOGICAL SURVEY OF WYOMING

EXPLANATION FOR GEOLOGIC MAP OF WYOMING

Compiled by
J. D. Love and Ann Coe Christiansen
1985

NOTES

Stratigraphic nomenclature differs in various parts of the State of Wyoming; therefore the State has been divided into several geographic areas in order to show the localities where specific stratigraphic units occur. The boundaries of these areas are approximate and remnants of some units are present beyond these boundaries. The geographic areas used for rocks of Quaternary and Tertiary age are shown on figure 1, and the areas for rocks of Mesozoic and Paleozoic age are on figure 2. Precambrian rocks are not listed geographically in the correlation diagrams and list of map units; however, in the description of stratigraphic units they are described for each mountain range or other area in which they occur. Some Quaternary and Tertiary surficial deposits occur throughout the State; consequently, no geographic area is designated.

The correlation diagrams show age ranges of map units; where a major unconformity separates individually described stratigraphic units that are combined in a single map unit, the age range is designated by a double-headed arrow. A query (?) at one or both ends of the arrow indicates uncertainty as to extent of range.

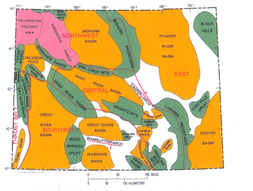


Figure 1.—INDEX MAP SHOWING REGIONS OF QUATERNARY AND TERTIARY ROCKS DIFFERENTIATED IN CORRELATION DIAGRAMS AND SELECTED GEOGRAPHIC AND TECTONIC FEATURES IN WYOMING

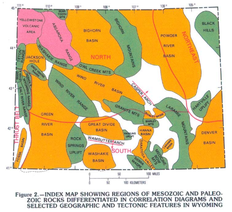


Figure 2.—INDEX MAP SHOWING REGIONS OF MESOZOIC AND PALEOZOIC ROCKS DIFFERENTIATED IN CORRELATION DIAGRAMS AND SELECTED GEOGRAPHIC AND TECTONIC FEATURES IN WYOMING

CORRELATION DIAGRAMS AND LIST OF MAP UNITS

QUATERNARY ROCKS AND UNCONSOLIDATED DEPOSITS

Qa ALLUVIUM AND COLLUVIUM
Qt GRAVEL, PEDIMENT, AND FAN DEPOSITS—May include some glacial deposits and Tertiary gravels
Qg GLACIAL DEPOSITS
Qls LANDSLIDE DEPOSITS
Qs DUNE SAND AND LOESS
Ql PLAYA LAKE AND OTHER LACUSTRINE DEPOSITS
Qu UNDIVIDED SURFICIAL DEPOSITS

NORTHWEST

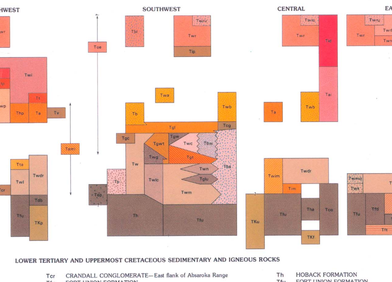
Qtb BASALT FLOWS AND INTRUSIVE IGNEOUS ROCKS
Qr RHYOLITE FLOWS, TUFF, AND INTRUSIVE IGNEOUS ROCKS

SOUTHWEST

Qi ALKALIC EXTRUSIVE AND INTRUSIVE IGNEOUS ROCKS

LOWER QUATERNARY AND TERTIARY ROCKS AND UNCONSOLIDATED SURFICIAL DEPOSITS[1]

QTg TERRACE GRAVEL (PLEISTOCENE AND/OR PLIOCENE)
QTs CONGLOMERATE
Jackson Hole (Pleistocene or Pliocene)
Medicine Bow Mountains and east of Laramie Mountains (Pleistocene to Miocene)
QTb BUG FORMATION (PLEISTOCENE OR PLIOCENE)



LOWER TERTIARY AND UPPERMOST CRETACEOUS SEDIMENTARY AND IGNEOUS ROCKS

THRUST BELT

Tsl SALT LAKE FORMATION
Tsu TEWINOOT FORMATION
Tr RED CONGLOMERATE ON TOP OF HOBACK AND WYOMING RANGES (MIOCENE?; MAY BE AS OLD AS EOCENE)

NORTHWEST

Thr HUCKLEBERRY RIDGE TUFF OF YELLOWSTONE GROUP
Ti INTRUSIVE AND EXTRUSIVE IGNEOUS ROCKS
Th HEART LAKE CONGLOMERATE—Southern Yellowstone area
Tsi SHOOTING IRON FORMATION—Central Jackson Hole
Tcc CONANT CREEK TUFF—Northern Jackson Hole
Tse TEEWINOOT FORMATION—Central Jackson Hole
Tcd CAMP DAVIS FORMATION—Southwestern Jackson Hole
Tc COLTER FORMATION—Central Jackson Hole
Tcv CALDWELL CANYON VOLCANICS—Southern Absaroka Range
Tml LOWER MIOCENE ROCKS—Bighorn Mountains

SOUTHWEST

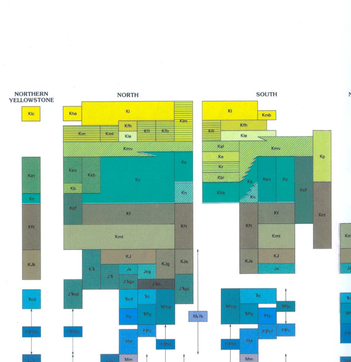
Tbf BASALT FLOWS AND INTRUSIVE IGNEOUS ROCKS—West side of Sierra Madre

CENTRAL

Tm MIOCENE ROCKS[2]
Tmu UPPER MIOCENE ROCKS[2]
Tml LOWER MIOCENE ROCKS
Tu POST-ECOCENE SANDSTONE AND CONGLOMERATE

EAST

Tmu UPPER MIOCENE ROCKS[2]
Tmo LOWER MIOCENE AND UPPER OLIGOCENE ROCKS OR ROCKS EQUIVALENT TO UPPER AND LOWER MIOCENE ROCKS AND WHITE RIVER FORMATION



MESOZOIC AND PALEOZOIC SEDIMENTARY ROCKS

THRUST BELT

Kav ADAVILLE FORMATION
Kbb BLIND BULL FORMATION
Kh HILLIARD SHALE
Kf FRONTIER FORMATION
Kas SAGE JUNCTION, QUEALY, COREVILLE, THOMAS FORK, AND SMITHS FORMATIONS
Kws WAYAN AND SMITHS FORMATIONS—One outcrop along Idaho border
Ka ASPEN SHALE
Kbr BEAR RIVER FORMATION
Kg GANNETT GROUP—Includes Smoot Formation, Draney Limestone, Bechler Conglomerate, Peterson Limestone, and Ephraim Conglomerate
Jst STUMP FORMATION, PRUISS SANDSTONE OR REDBEDS, AND TWIN CREEK LIMESTONE
J'Sn NUGGET SANDSTONE
J'Snd NUGGET SANDSTONE, ANKAREH FORMATION, THAYNES LIMESTONE, WOODSIDE SHALE, AND DINWOODY FORMATION
J'Sand ANKAREH FORMATION, THAYNES LIMESTONE, WOODSIDE SHALE, AND DINWOODY FORMATION
Pp PHOSPHORIA FORMATION
P'PMa PHOSPHORIA, WELLS, AND AMSDEN FORMATIONS
P'PMd WELLS AND AMSDEN FORMATIONS
Mm MADISON GROUP
MD MADISON GROUP AND DARBY FORMATION
Sl LAKETOWN DOLOMITE—Utesa County
O-C BIGHORN DOLOMITE, GALLATIN LIMESTONE, AND GROS VENTRE FORMATION

NORTHERN YELLOWSTONE

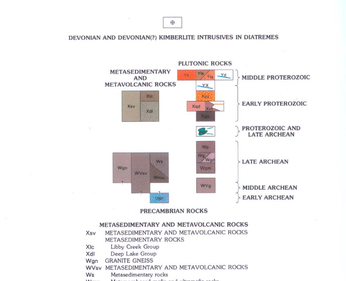
Klc LANDSLIDE CREEK FORMATION
Ket EVERTS FORMATION, EAGLE SANDSTONE, AND TELEGRAPH CREEK FORMATION
Kc CODY SHALE
Kfr FRONTIER FORMATION AND MOWRY AND THERMOPOLIS SHALES
K,Jk KOOTENAI AND MORRISON FORMATIONS AND ELLIS GROUP
Ncd CHUGWATER AND DINWOODY FORMATIONS
P'PMa PHOSPHORIA FORMATION AND RELATED ROCKS, TENSLEEP SANDSTONE, AND AMSDEN FORMATION
P'Pc CASPER FORMATION
P'PM CASPER FORMATION AND MADISON LIMESTONE
Pm TENSLEEP SANDSTONE AND AMSDEN FORMATION
Mm MADISON LIMESTONE OR GROUP—Includes wedge edge of Bighorn Dolomite in Figs. 43 and 44 N., Rgs. 85 and 86 W.
MD MADISON LIMESTONE AND DARBY FORMATION
MDO MADISON LIMESTONE, DARBY OR THREE FORKS, JEFFERSON, AND BEARTOOTH BUTTE FORMATIONS
O-C BIGHORN DOLOMITE, SNOWY RANGE FORMATION, PILGRIM LIMESTONE, PARK SHALE, MEAGHER LIMESTONE, WOLSEY SHALE, AND FLATHEAD SANDSTONE

NORTH

Kl LANCE FORMATION
Klm LANCE FORMATION, FOX HILLS SANDSTONE, METETETSE FORMATION, AND BEARPAW AND LEWIS SHALES—In the Bighorn Basin consists of Lance, Meeteetse, and, in the southeastern part, tongue of Lewis Shale; in the northern part of the Wind River Basin, of Lance, Meeteetse, and Lewis, and, in the southeastern part of the basin, of Lance and Lewis; on the west side of the Wind River Basin north of T. 43 N., of Lance, Fox Hills, and Bearpaw, and, to the south, of Lance, Fox Hills, and Lewis
Kha HARLEM FORMATION
Kfh FOX HILLS SANDSTONE
Klt FOX HILLS SANDSTONE AND LEWIS SHALE
Kfb FOX HILLS SANDSTONE AND BEARPAW SHALE
Km METETETSE FORMATION
Kml METETETSE FORMATION AND LEWIS SHALE
Kle LEWIS SHALE
Kmv MESAVERDE FORMATION
Kso SOHARE FORMATION
Ksb SOHARE FORMATION AND BACON RIDGE SANDSTONE[3]
Kb BACON RIDGE SANDSTONE
Kc CODY SHALE
Kcf CODY SHALE AND FRONTIER FORMATION
Ks STEELE SHALE
Kn NIOBRARA FORMATION
Kf FRONTIER FORMATION
Kfm FRONTIER FORMATION AND MOWRY AND THERMOPOLIS SHALES
Kmt MOWRY AND THERMOPOLIS SHALES
K,J CLOVERLY AND MORRISON FORMATIONS—In southern Yellowstone area and Jackson Hole the presence of the Morrison is questionable
K,Js CLOVERLY, MORRISON, AND SUNDANCE FORMATIONS—Includes wedge edge of Nugget Sandstone in T. 34 N., R. 88 W., and T. 32 N., R. 91 W.
K,Jg CLOVERLY, MORRISON, SUNDANCE, AND GYPSUM SPRING FORMATIONS
K'S CLOVERLY, MORRISON, SUNDANCE, AND GYPSUM SPRING FORMATIONS AND NUGGET SANDSTONE
Js SUNDANCE FORMATION
Jsg SUNDANCE AND GYPSUM SPRING FORMATIONS
J'S SUNDANCE AND GYPSUM SPRING FORMATIONS AND NUGGET SANDSTONE
J'Jgo GYPSUM SPRING FORMATION AND NUGGET SANDSTONE—Wind River Basin
J'Jgo GYPSUM SPRING FORMATION, NUGGET SANDSTONE, AND CHUGWATER FORMATION
J'Sn NUGGET SANDSTONE
J'Snd NUGGET SANDSTONE AND CHUGWATER AND DINWOODY FORMATIONS
Ncd CHUGWATER AND DINWOODY FORMATIONS
Ncd CHUGWATER AND DINWOODY FORMATIONS
N'Pcg CHUGWATER AND GOOSE EGG FORMATIONS
N'Pg GOOSE EGG FORMATION
Mv,Pc MESOZOIC AND PALEOZOIC ROCKS—Shown in small areas of complex structure
East flank of Absaroka Range—Dinwoody Formation, Phosphoria Formation and related rocks, Tensleep Sandstone, and Amsden Formation (Lower Triassic through Upper Mississippian)
East flank of Bighorn Mountains—Cloverly, Morrison, Sundance, Gypsum Spring, Chugwater, and Goose Egg Formations (Lower Cretaceous through Permian)
Pp PHOSPHORIA FORMATION
P'PMa PHOSPHORIA FORMATION AND RELATED ROCKS—Intertonguing equivalents of parts of Phosphoria and Park City Formation and Shedhorn Sandstone
P'PMa PHOSPHORIA FORMATION AND RELATED ROCKS, TENSLEEP SANDSTONE, AND AMSDEN FORMATION
P'Pc CASPER FORMATION
P'PM CASPER FORMATION AND MADISON LIMESTONE
Pm TENSLEEP SANDSTONE AND AMSDEN FORMATION
Mm MADISON LIMESTONE OR GROUP—Includes wedge edge of Bighorn Dolomite in Figs. 43 and 44 N., Rgs. 85 and 86 W.
PM MADISON LIMESTONE AND DARBY FORMATION
MDO MADISON LIMESTONE, DARBY OR THREE FORKS, JEFFERSON, AND BEARTOOTH BUTTE FORMATIONS
Ob Darby on west flank of Washakie Range; Beartooth Butte only in Beartooth Mountains
MD MADISON LIMESTONE AND BIGHORN DOLOMITE—East side of Bighorn Mountains
Ꝑr MADISON LIMESTONE, DARBY FORMATION, BIGHORN DOLOMITE, GALLATIN LIMESTONE, GROS VENTRE FORMATION, AND FLATHEAD SANDSTONE[4]
O-C BIGHORN DOLOMITE, GALLATIN LIMESTONE, GROS VENTRE FORMATION, AND FLATHEAD SANDSTONE
Cr GALLATIN LIMESTONE, GROS VENTRE FORMATION AND EQUIVALENTS, AND FLATHEAD SANDSTONE

SOUTH

Kl LANCE FORMATION
Kmb MESAVERDE FORMATION
Kfh FOX HILLS SANDSTONE
Klt FOX HILLS SANDSTONE AND LEWIS SHALE
Kle LEWIS SHALE
Kp PIERRE SHALE
Kmv MESAVERDE FORMATION
Kso SOHARE FORMATION
Ksb SOHARE FORMATION AND BACON RIDGE SANDSTONE[3]
Kb BACON RIDGE SANDSTONE
Kc CODY SHALE
Kcf CODY SHALE AND FRONTIER FORMATION
Ks STEELE SHALE
Kn NIOBRARA FORMATION
Kf FRONTIER FORMATION
Kfm FRONTIER FORMATION AND MOWRY AND THERMOPOLIS SHALES
Kmt MOWRY AND THERMOPOLIS SHALES
K,J CLOVERLY AND MORRISON FORMATIONS—In southern Yellowstone area and Jackson Hole the presence of the Morrison is questionable
Kba BAXTER SHALE
Kc CODY SHALE
Kcf CODY SHALE AND FRONTIER FORMATION
Ks STEELE SHALE
Kbs STEELE SHALE AND NIOBRARA FORMATION
Kn NIOBRARA FORMATION
Knt NIOBRARA AND FRONTIER FORMATIONS, AND MOWRY AND THERMOPOLIS SHALES
Kf FRONTIER FORMATION
Kmt MOWRY AND THERMOPOLIS SHALES
Kmv MESAVERDE FORMATION
Kgb GREENHORN FORMATION AND BELLE FOURCHE SHALE
Kgbn GREENHORN FORMATION AND BELLE FOURCHE AND MOWRY SHALES
Kmv MOWRY SHALE
Kmt MOWRY AND THERMOPOLIS SHALES
Kna NEWCASTLE SANDSTONE AND SKULL CREEK SHALE
K,J CLOVERLY FORMATION (TRIASSIC UPLIFT) OR INYAN KARA GROUP (BLACK HILLS AND MORRISON FORMATION
Js SUNDANCE FORMATION
Jsg SUNDANCE AND GYPSUM SPRING FORMATIONS
Jc CHUGWATER FORMATION
J'Ps SPEARFISH FORMATION
J'Pg GOOSE EGG FORMATION
Pmo MINNEKAHTA LIMESTONE AND OPECHE SHALE
Ꝑr MINNEKAHTA LIMESTONE, OPECHE SHALE, MINNELUSA FORMATION, PAHASAPA AND ENGLEWOOD LIMESTONES, WHITEWOOD DOLOMITE, AND WINNIPEG AND DEADWOOD FORMATIONS—Various combinations
P'Ph HARTVILLE FORMATION—Lowermost unit may be Late Mississippian
P'Pm MINNELUSA FORMATION
MDa PAHASAPA AND ENGLEWOOD LIMESTONES
MDg GUERNSEY FORMATION—Locally includes dolomite and sandstone of Devonian and Cambrian(?) age
O-C WHITEWOOD DOLOMITE, AND WINNIPEG AND DEADWOOD FORMATIONS



METASEDIMENTARY AND METAVOLCANIC ROCKS

Xsv METASEDIMENTARY AND METAVOLCANIC ROCKS
METASEDIMENTARY ROCKS
Xlc Libby Creek Group
Xdl Deep Lake Group
Wgn GRANITE GNEISS
Wvw METASEDIMENTARY AND METAVOLCANIC ROCKS
Wx Metasedimentary rocks
Wmu Metamorphosed mafic and ultramafic rocks
Wgn OLDEST GNEISS COMPLEX—Overprint pattern indicates areas of migmatite emplacement of 2,600-Ma granite

PLUTONIC ROCKS

Ys SHERMAN GRANITE
LARAMIE ANORTHOSITE COMPLEX
Yls Pyroxene and hornblende syenite
Yla Anorthosite and norite
Yd RHYOLITE TO DIABASE PORPHYRY DIKES
Yk MAFIC INTRUSIVE ROCKS
Xgy GRANITIC ROCKS OF 1,700-Ma AGE GROUP
Xqd QUARTZ DIORITE
Xm MAFIC INTRUSIVE ROCKS
Xgo GRANITIC ROCKS OF 2,600-Ma AGE GROUP
BW MAFIC INTRUSIVE ROCKS
Wp PERIDOTITE INTRUSIVE ROCKS
Wgd GRANODIORITE OF LOUIS LAKE PLUTON
Wqm QUARTZ MONZONITE OF NORTH YELLOWSTONE
Wpl PLUTONIC ROCKS

SYMBOLS

CONTACT

FAULT—Dotted where concealed. Bar and ball on downthrown side. Includes shear zones as well as faults in Precambrian rocks in the Wind River Range, Medicine Bow Mountains, and Sierra Madre

THRUST FAULT—Dotted where concealed. In some places the dotted line indicates where the fault intersects an unconformity between faulted strata below and unfaulted strata above; in other places it indicates where the shallower part of the fault disappears into bedding planes. Sawteeth on upper plate. Some thrust faults are deeply buried and are approximately located on the basis of seismic data and drilling

THRUST FAULT WITH YOUNGER NORMAL FAULT ALONG SAME TRACE—Dashed where approximately located; dotted where concealed. Sawteeth on upper plate on thrust fault; bar and ball on downthrown side of normal fault

SHEAR ZONE

IMPACT STRUCTURE—Not exposed; determined by drilling; date of emplacement between Triassic and Late Jurassic time (Karl Kleinhammer, written commun., 1980)

CRETACEOUS(?)
INTRUSIVE IGNEOUS ROCKS
Beartooth Mountains

FOOTNOTES

[1]Query indicates uncertainty of position of top of unit within the Pleistocene.
[2]Age of upper parts of uppermost Miocene units is problematic. These parts have historically been assigned to the Pliocene. Sporadic radiometric age of the top of the Miocene in Europe is 7 Ma (Lambert, 1971) and 10 Ma (Berggren, 1972); place a Pliocene age in question, although the top beds of deformations have not been dated.
[3]Karlstrom and others (1983).
[4]Orris (1976).
[5]Snyder (1980).
[6]McCallum (1968).

See sheet 3 for principal source of geologic data and references cited.

DESCRIPTION OF STRATIGRAPHIC UNITS

This description generally lists individual stratigraphic units in order of increasing age or from left to right as the map units appear in the correlation diagrams. Stratigraphic units may be included in one or more map units; such stratigraphic units are represented by the colors and letter symbols in the boxes below and by the letter symbols in the correlation diagrams and list of map units. Letter symbols following the description indicate which combinations have been made because of cartographic limitations. The list of map units shows all the combinations of stratigraphic units.

System and series designations are given in the individual stratigraphic descriptions only where the brackets beside the boxes do not indicate the specific age of the unit. Ages are given in Ma, Mega-annum (million years).

QUATERNARY ROCKS AND UNCONSOLIDATED DEPOSITS

Qa, Qt, Qg, Qls, Qs, Ql, Qc — Holocene and Pleistocene

ALLUVIUM AND COLLUVIUM—Clay, silt, sand, and gravel in flood plains, fans, terraces, and slopes. Qa

GRAVEL, PEDIMENT, AND FAN DEPOSITS—Mostly locally derived clasts. Includes some glacial deposits along east flank of Wind River Range. Locally includes some Tertiary gravels. Qt

GLACIAL DEPOSITS—Till and outwash of sand, gravel, and boulders. Qg

LANDSLIDE DEPOSITS—Locally includes intermixed landslide and glacial deposits, talus, and rock-glacier deposits. Qls

DUNE SAND AND LOESS—Includes active and dormant sand dunes. In northwestern Wyoming is chiefly loess (age 12,000–19,000 yrs). Qs

PLAYA LAKE AND OTHER LACUSTRINE DEPOSITS—Chiefly clay, silt, and fine sand. Includes travertine deposits. Ql

UNDIVIDED SURFICIAL DEPOSITS—Mostly alluvium, colluvium, and glacial and landslide deposits. Primarily in Yellowstone area and Bighorn Mountains. Qu

Qc, Qb, Qr — Pleistocene

BASALT FLOWS AND INTRUSIVE IGNEOUS ROCKS
Yellowstone area—Includes Osprey, Madison River, Swan Lake Flat, and Falls River Basalts, basalts of Mariposa Lake, Obsidian Falls flow, basalt of gravels, sands, silts, and basalt of The Narrows. Qb
In and adjacent to Absaroka and Washakie Ranges—Includes basalt of Lava Mountain (age about 0.5 Ma). Qb

RHYOLITE FLOWS, TUFF, AND INTRUSIVE IGNEOUS ROCKS—Includes Pinnacle Rhyolite (age about 0.07 Ma) and Interlayered sediments, Mount Jackson Rhyolite (age 0.6 to about 2 Ma), Lewis Canyon Rhyolite (age about 0.9 Ma), and Lava Creek Tuff of Yellowstone Group (age 0.6 to about 1 Ma). Qr

ALKALIC EXTRUSIVE AND INTRUSIVE IGNEOUS ROCKS (AGE 1.25 Ma)—Leucite- and nepheline-rich flows, scoria, and necks. Qi

LOWER QUATERNARY AND TERTIARY ROCKS AND UNCONSOLIDATED SURFICIAL DEPOSITS

QTg, QTs, QTb — Pleistocene, Pliocene, Miocene

TERRACE GRAVEL (PLEISTOCENE AND/OR PLIOCENE)—Partly consolidated gravel above and flanking some modern streams. QTg

CONGLOMERATE
Northwest Wyoming (Jackson Hole) (Pleistocene or Pliocene)—Paleozoic clasts, chiefly of Madison Limestone, in a lithified carbonate matrix. QTc
Central Medicine Bow Mountains and east Wyoming (east of Laramie Mountains) (Pleistocene to Miocene)—Giant granite boulders in an arkose matrix. QTc

BUG FORMATION (PLEISTOCENE OR PLIOCENE)—Lacustrine white marl, claystone, sandstone, conglomerate, and tuff; generally radioactive. QTb

TERTIARY SEDIMENTARY AND IGNEOUS ROCKS

Tbr — Pliocene

HUCKLEBERRY RIDGE TUFF OF YELLOWSTONE GROUP (AGE SLIGHTLY MORE THAN 2 Ma)—Lavender to gray-brown welded rhyolite tuff. Thr

HEART LAKE CONGLOMERATE—Abundant gray limestone and dolomite clasts and sparse rhyolite and quartzite clasts in a tale and clay matrix. Th

SHOOTING IRON FORMATION—Greenish-gray to pink tuffaceous lacustrine and fluviatile claystone and siltstone, fine-grained sandstone, and conglomerate. Tsi

Tsu, Tsl, Tw, Twc, Twt, Twn, Twb, Twm, Twp, Twi, Tbr, Tsi, Tc, Tcc, Tcd, Tcv, Tmo, Tmu, Tml, Tu, Tbf, Tm — Miocene and Pliocene

CONANT CREEK TUFF (AGE ABOUT 5.8 Ma)—Lavender rhyolite welded tuff. Tcc

TEEWINOOT FORMATION (AGE ABOUT 9 Ma)—White lacustrine clay, tuff, and limestone. In thrust belt includes conglomerate. Tse

CAMP DAVIS FORMATION—Upper 5,000 ft chiefly red conglomerate and red claystone; underlain by white tuffaceous siltstone, claystone, and local conglomerate. Tcd

COLTER FORMATION—Dull-green and gray tuff, volcanic conglomerate, and sandstone. Tc

RED CONGLOMERATE ON TOP OF HOBACK AND WYOMING RANGES (MIOCENE?; MAY BE AS OLD AS EOCENE)—Locally derived clasts of Mesozoic and Paleozoic rocks in a red clay and sand matrix. Tr

BASALT FLOWS AND INTRUSIVE IGNEOUS ROCKS (AGE ABOUT 11 Ma). Tbf

EOCENE ROCKS
Southwest Wyoming
Southern Rock Springs uplift—Pale-green to tan tuffaceous sandstone and claystone of Miocene(?) age. Conglomerate of uncertain correlation locally at base. Tm
Saratoga Valley and west and southwest to Colorado—White massive soft tuffaceous sandstone and lesser amounts of white marl; lower part conglomeratic; Underfas North Park Formation (Lower Eocene) and, west of fault in T. 19 N., Casper Formation. Tow
Rawlins area—White massive soft tuffaceous sandstone. Tm
Central Wyoming—White soft tuffaceous sandstone. Locally derived conglomerate in upper and lower parts and carbonaceous shale. Tdb
Washakie Basin—In places lower conglomeratic sequence may be Paleocene in age. In Granite Mountains K/Pz age of tuff in lower part of sandstone sequence about 17 Ma and Wagon Bed Formation age of lower conglomerate about 24 Ma. Tm

UPPER MIOCENE ROCKS[2]
Southwest Wyoming
South end of Wind River Range—Siliceous, arkosic, and locally radioactive sandstone, claystone, and conglomerate. Lower part is rock age about 27 Ma. Remainder of unit is rock age of part of these deposits may be of Eocene age. Pliocene and Miocene (as originally defined)? South Pass Formation. Tmu
Saratoga Valley—White to greenish-gray tuffaceous sandstone, siltstone, and claystone; locally conglomeratic. North Park Formation. Tmu
Central Wyoming—Arkosic sandstone, conglomerate, and siltstone; some light-colored tuffaceous sandstone, claystone and white chalky limestone. Tmu
North of Sweetwater River in Granite Mountains—Light-colored tuffaceous radioactive claystone, siltstone, sandstone, and arkose. Moonstone Formation. Tmu
East Wyoming—Light-colored tuffaceous sandstone, claystone, sandstone, and conglomerate. Ogallala Formation in Denver Basin. Tmo

LOWER MIOCENE ROCKS
Northwest Wyoming (Bighorn Mountains)—Gray soft poorly bedded to massive sandstone. Tml
Central Wyoming—Tuffaceous sandstone, siltstone, and white marl. Tml

Tmo, Tmu — Miocene and upper Oligocene

LOWER MIOCENE AND UPPER OLIGOCENE ROCKS—Light-colored soft porous sandstone and underlying white tuffaceous claystone and siltstone. Arikaree Formation in Denver Basin. Tmo

ROCKS EQUIVALENT TO UPPER AND LOWER MIOCENE ROCKS AND WHITE RIVER FORMATION—Light-colored sandstone, white tuffaceous blocky claystone, and siltstone. Black Hills. Tmo

Tu — Post-Eocene

SANDSTONE AND CONGLOMERATE—Gray hard coarse-grained sandstone and conglomerate. Tu

Tmo, Twi, Twn, Twb, Twm, Twp, Twi, Tbr — Oligocene

BISHOP CONGLOMERATE—Clasts of red quartzite, gray chert, and limestone in a gray to white tuffaceous sandstone matrix. Tbr

WHITE RIVER FORMATION (AGE 31 TO 35 Ma)—White to pale-pink blocky tuffaceous claystone and lenticular arkosic conglomerate. Twi
Upper conglomerate member—Light-gray soft conglomeratic tuffaceous sandstone and conglomerate of Precambrian clasts. Twnu
Brule Member—Pale-pink to white blocky tuffaceous claystone and lenticular sandstone. Locally includes the upper conglomerate member. Twrb
Chadron Member—Light-gray to dark-red tuffaceous claystone, sandstone, and lenticular conglomerate. Twrc

Tu, Twi — Pliocene(?) and Eocene

FOWKES FORMATION—Light-colored tuffaceous sandstone and siltstone, locally conglomeratic. Locally designated by some as Norwood Tuff. Tf

Twi, Twn, Twb, Twm, Twp, Twi, Tbr, Tsi, Tc, Tcc, Tcd, Tcv, Tmo, Tmu, Tml, Tu, Tbf, Tm — Oligocene and (or) Eocene

OLIGOCENE AND (OR) UPPER AND MIDDLE EOCENE ROCKS—Light-gray tuff, arkosic sandstone, and lenticular conglomerate. Twi

DACITE AND QUARTZ LATITE INTRUSIVE AND EXTRUSIVE IGNEOUS ROCKS (AGE ABOUT 44 Ma)—Light-gray porphyritic rock. Tid

Twi, Twn, Twb, Twm, Twp, Twi, Tbr, Tsi, Tc, Tcc, Tcd, Tcv, Tmo, Tmu, Tml, Tu, Tbf, Tm, Tw, Twc, Twt