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EXPLANATION

QUATERNARY

Pleistocene and Holocene

Qae | Qa | Qe

Alluvial and eolian deposits

Qae, *alluvial and eolian deposits: windblown silt and sand on benches and broad valleys, reworked in part by running water*
Qa, *alluvial deposits: silt, sand, and gravel in stream valleys and flood plains; includes soil and locally some colluvial and eolian deposits*
Qe, *eolian deposits: reddish-brown loess on broad plains, mesas, and large benches; unconsolidated silt and sand banked against cliffs and mantling large areas of broad valleys*

Qag | Qat | Qaf | Qap

Alluvial gravel deposits

Qag, *alluvial gravels: fluvial deposits on upland surfaces composed mostly of rounded boulder- to sand-sized igneous rocks derived from the San Juan and La Plata Mountains; probably of glacial outwash origin but also includes terrace and pediment gravels of earlier erosion cycles*
Qat, *terrace gravels: sand and gravel deposits on benches along major streams*
Qaf, *alluvial fan deposits: coarse subangular poorly sorted locally derived material*
Qap, *pediment gravels: poorly sorted angular to well-rounded sand, pebbles, and boulders; mostly diorite porphyry; in thin partly dissected deposits near the Abajo and Sleeping Ute Mountains*

Qc | Qcl | Qct

Colluvial deposits

Qc, *colluvial deposits: talus, slope wash, block rubble, rock glaciers, and, in some high cirques in the San Miguel Mountains, young glacial till*
Qcl, *landslide debris: unsorted material, commonly in large displaced blocks with characteristic arcuate hummocky surfaces*
Qct, *talus deposits: accumulations of angular blocks fallen from cliffs and outcrops of resistant rock*

Pleistocene

Qgm | Qgd

Glacial deposits

Qgm, *till: mostly unsorted and unstratified moderately weathered and eroded younger glacial debris in lateral and recessional moraines along present stream valleys*
Qgd, *drift: older glacial and fluvio-glacial material; largely gravel much modified by weathering and erosion; in small remnants scattered on upland surfaces*

Qb

Basalt

Thin flow, dike, and plug composed of phenocrysts of augite and olivine in glassy matrix

Pliocene — TERTIARY AND QUATERNARY

QTap

Pediment deposit

Brown clayey and silty sand and gravel; commonly capped and cemented by caliche; thin veneers on upland surfaces

Pliocene or Pleistocene — TERTIARY OR QUATERNARY

QTbg

Bridgetimber Gravel

Stream-deposited bouldery and sandy gravel about 100 feet thick derived from the San Juan Mountains

TERTIARY

Age and correlation uncertain

Ti

Intrusive igneous rocks

Sills, dikes, and small plutons; mostly calcic granodiorite, but may include lamprophyre and rhyolite

Tgg

Granogabbro (calcic granodiorite)

Gray fine-grained generally porphyritic rock; phenocrysts mostly labradorite and augite with sparse biotite and hornblende; groundmass largely plagioclase, orthoclase, and quartz. In sills, dikes, floored intrusives, and stocks in and near San Miguel Mountains

Tmq

Monchiquite

Trachybasaltic lamprophyric rock composed chiefly of augite and olivine, small but variable amounts of hornblende and biotite, sparse orthoclase, plagioclase, and analcite; in dikes in Rico Mountains

Tmn

Minette

Trachybasaltic or lamprophyric rocks composed of essential biotite and sanidine, lesser and variable amounts of pyroxene and hornblende, and sparse feldspathoids; in sills, dikes, and small plutons

Teb

Explosion breccia

Fragments and blocks of underlying sedimentary and igneous rocks in a matrix of comminuted serpentine, of volcanic ash and tuff, or of minette; in diatremes or volcanic vents

Tgd | Tql

Rocks of the San Miguel Mountains igneous center

One stock at Dolores Peak and one near El Diente Peak with satellitic floored and cross-cutting plutons, sills, and dikes, and one laccolith at Little Cone. Composed of closely allied generally porphyritic rocks of intermediate composition. Intrude rocks as young as the San Juan Formation
Tgd, *granodiorite and porphyritic granodiorite: gray porphyry; phenocrysts of andesine-rimmed labradorite, orthoclase, quartz, and sparse pyroxene, biotite, and hornblende; groundmass of quartz, potassic feldspar, plagioclase, and mafic minerals. Includes quartz monzonite and some granogabbro. In stocks and related floored intrusives*
Tql, *quartz latite: gray generally porphyritic rock composed of phenocrysts of plagioclase, quartz, hornblende, and pyroxene in groundmass of plagioclase, potassic feldspar, and quartz. In satellitic sills and dikes*

Eocene or older

Ts

San Juan Formation

Grayish-green to purple andesitic tuffs and tuff-breccias, in part water-laid. About 400 feet thick

Eocene

Tt

Telluride Conglomerate

Pale-red sandstone, siltstone, claystone, and arkosic conglomerate; contact-metamorphosed around stocks. About 900 feet thick

Tsj

San Jose Formation

Gray, green, and red shale and grayish-yellow sandstone and conglomeratic sandstone in friable slope-forming lenses or in well-cemented thick cliff-forming beds; sparse thin beds of pale-gray silicified tuff. About 1,000 feet thick

Paleocene

Tn

Nacimiento Formation

Gray, brown, green, and red shale and yellowish-gray to brown friable crossbedded medium-grained and conglomeratic sandstone. About 1,000 feet thick in southeast corner of map; thins northward to a wedge edge within 10 miles

Tsn

San Jose and Nacimiento Formations

CRETACEOUS AND TERTIARY

Upper Cretaceous and Paleocene

TKa

Animas Formation

Interbedded olive-green to reddish-brown breccia, conglomerate, tuffaceous sandstone, lithic tuff, and shale; composed of andesitic debris and siliceous pebbles; includes at the base, the intertonguing McDermott Member, 0–300 feet thick; igneous material derived from La Plata Mountains. Formation coarsens northwestward; thins southward from about 1,000 feet thick to about 30 feet in southeast corner of map

CRETACEOUS AND (OR) TERTIARY

Age and correlation uncertain

TKda | TKas

Rocks of the Abajo Mountains igneous center

Two stocks, 31 laccoliths, and sills and dikes composed of closely allied porphyritic rock mostly in the range diorite to quartz-diorite, but including granodiorite and quartz monzonite. Most laccoliths emplaced in the Mancos Shale
TKda, *quartz diorite porphyry: gray, weathering characteristically to reddish-purple blocks; composed of euhedral phenocrysts of andesine and hornblende in light-gray dense groundmass of orthoclase, albite-oligoclase, and quartz; accessory magnetite, sphene, apatite; small hornblende-rich inclusions*
TKas, *stock*

TKdu | TKus

Rocks of the Sleeping Ute Mountain igneous center

Three stocks, more than 20 laccoliths, and sills and dikes composed of closely related porphyritic rock, predominantly in the range quartz-diorite to granodiorite. Youngest sedimentary rock intruded is the Point Lookout Sandstone
TKdu, *quartz diorite porphyry: predominantly greenish-gray, weathering yellowish brown; composed of phenocrysts of zoned plagioclase (labradorite-oligoclase), hornblende, sparse or no augite, and variable but small amounts of quartz, with accessory magnetite, apatite, and sphene, in dense groundmass of sodic plagioclase, orthoclase, and quartz. Map unit includes small masses of lamprophyre, quartz-monzonite porphyry, and microgabbro*
TKus, *stock*

TKm | TKms

Rocks of the Rico Mountains igneous center

One large stock, sills (some thick), and dikes composed of allied rocks intermediate in composition between quartz diorite and quartz monzonite. Most intrusives emplaced in Dolores and Cutler Formations; some intrude Mancos Shale
TKm, *monzonite and monzonite porphyry: generally gray, locally hydrothermally altered white, red, or yellow; consists of subequal amounts of orthoclase and plagioclase, hornblende, some quartz, and sparse biotite and augite. Where porphyritic in dikes and floored intrusives, most phenocrysts are plagioclase and hornblende*
TKms, *stock*

TKdl | TKls

Rocks of the La Plata Mountains igneous center

Six or more stocks and irregular stocklike masses, numerous sills (some thick), dikes and laccolithic floored intrusives. The prevailing rock is a porphyry intermediate in composition between diorite and monzonite, but composition ranges from diorite to monzonite and syenite. Much of stock rock altered; sedimentary rocks as young as Mancos Shale in an area of 13 square miles centered under the stocks are contact metamorphosed
TKdl, *quartz diorite porphyry: light-greenish-gray, light-brown, gray, or grayish-pink; generally porphyritic. Composed of labradorite, orthoclase, anorthoclase, microperthite, hornblende, and augite or aegerine-augite in slightly variable proportions with lesser amounts of biotite and quartz; accessory sphene commonly abundant. Map unit includes syenite, diorite, monzonite, their porphyritic equivalents, including andesite, and small bodies of mafic rock*
TKls, *stock*

CRETACEOUS

Upper Cretaceous

Kku | Kkm | Kkl

Kirtland Shale

Nonmarine. About 1,100 feet thick, its three members of about equal thickness
Kku, *upper member: olive to greenish-gray shale; sparse lenses of friable, locally conglomeratic, fine-grained sandstone*
Kkm, *Farmington Sandstone Member: cliff-forming grayish-orange to olive arkosic sandstone in thick-bedded lenses separated by thin shale partings*
Kkl, *lower member: olive to greenish-gray chloritic shale; sparse lenses of poorly indurated fine-grained sandstone*

Kf

Fruitland Formation

Gray, brown, olive, and black chloritic shale, yellowish-brown or gray locally carbonaceous crossbedded sandstone, and coal; intertongues with underlying Pictured Cliffs Sandstone. About 500 feet thick

Kpc

Pictured Cliffs Sandstone

Medium- to thick-bedded cliff-forming marine sandstone, yellowish-orange to light-gray, crossbedded, fine- to medium-grained, well-sorted, quartzose. About 250 feet thick

Kl

Lewis Shale

Gray marine clay shale; a few rusty-weathering limestone concretions and concretionary beds; thin platy beds of fine-grained sandstone near transitional top and base. Thickens northeastward in La Plata River valley from 1,450 to about 1,800 feet

Kmv

Mesaverde Group

Kch

Cliff House Sandstone

Yellowish-orange to yellowish-brown fine- to medium-grained cross-bedded marine sandstone and gray shale. About 400 feet thick at south edge of map where tongues of Menefee Formation are included

Kmf

Menefee Formation

Nonmarine. Lenticular beds of yellowish-gray and brown crossbedded sandstone, gray and brown claystone and shale, coal seams, and ironstone and limestone concretions. 350 to 800 feet thick; thins northeastward

Kpl

Point Lookout Sandstone

Upper part: prominent yellowish-gray to brown cliff-forming massive crossbedded marine sandstone
Lower part: alternating thin beds of yellowish-gray sandstone and gray shale
About 400 feet thick

Kmj | Km

Mancos Shale

Gray to dark-gray soft fissile sparsely fossiliferous marine clay shale; a few thin distinctive calcareous sandstone and sandy clayey limestone ledges in lower 400 feet. Grades vertically into and intertongues with formations of the Mesaverde Group. 2,000 to 3,000 feet thick; thickens northeastward
Kmj, *Juana Lopez Member: thin-bedded brown sandy fossiliferous limestone and dark-gray shale. Forms a cuesta about 500 feet above the base of Mancos Shale. 25 to 50 feet thick. Probably present but unmapped throughout southeast quadrant of map. In the Sleeping Ute Mountain area the mapped unit includes a coarse-grained glauconitic sandstone as much as 9 feet thick of early Niobrara age unconformably above the Juana Lopez Member*

Upper(?) Cretaceous

Kd

Dakota Sandstone

Dominantly yellowish-brown to gray quartzitic sandstone and conglomeratic sandstone in thick beds; subordinate thin lenticular beds of gray claystone, impure coal, carbonaceous papery shale, and gray friable carbonaceous sandstone; local coarse basal conglomerate. Marine near top; fluvial near base. Intertongues with Mancos Shale. A few tens of feet to 225 feet thick; averages about 100 feet thick

UNCONFORMITY

Lower Cretaceous

Kbc

Burro Canyon Formation

Light-gray and light-brown fluvial quartzose sandstone and conglomerate in thick beds; lenticular greenish-gray, locally purplish, commonly nonbentonitic siltstone, shale, and mudstone; a few thin lenses of gray limestone and chert near top. Averages about 150 feet thick; thins southward to an irregular wedge edge near San Juan River south of which are only a few thin discontinuous conglomerate lenses. In northeast part of map thin discontinuous mudstone and sandstone lenses are locally mapped with the Brushy Basin Member of the Morrison Formation. A few uranium deposits occur in some thick sandy conglomeratic beds and in some beds of gray shale

Kdb

Dakota and Burro Canyon Formations

JURASSIC

Upper Jurassic

Jmb | Jm | Jmt | Jmw | Jmr | Jms | Jmwr | Jmws

Morrison Formation

Dominantly fluvial, subordinately lacustrine, sandstone and mudstone alluvial deposits. Generally about 600 feet thick; thickness ranges from 550 feet in south center of map to 800 feet in northwest part
Jmb, *Brushy Basin Member: variegated gray, pale-green, red-brown, or purple bentonitic mudstone; a few lenses of distinctive green and red chert-pebble conglomeratic sandstone, some of which contain uranium-vanadium deposits. Thickness ranges from about 150 to more than 700 feet. In San Juan Mountains as mapped locally includes Burro Canyon Formation*
Jmw, *Westwater Canyon Member: mostly yellowish- and greenish-gray to pinkish-gray lenticular fine- to coarse-grained arkosic sandstone; some interbedded greenish-gray or grayish-red sandy shale and mudstone. About 180 feet thick in Bluff area; thins northeastward to a wedge edge between Blanding and Cortez*
Jmr, *Recapture Member: reddish-gray, white, and brown fine- to medium-grained sandstone characterized by dark- and light-colored grains; interbedded reddish-gray siltstone and mudstone. About 200 feet thick in southwest corner of map; thins, intergrades, and intertongues northeastward with Salt Wash Member. Contains a few uranium deposits*
Jms, *Salt Wash Member: pale-gray, grayish-orange, or moderate-reddish-brown fine- to medium-grained fluvial sandstone in thick discontinuous beds; interbedded greenish- and reddish-gray mudstone; thin beds of limestone locally near base. In San Miguel Mountains may include at base a thin equivalent of Junction Creek Sandstone. As much as 550 feet thick; thin or absent from south of San Juan River nearly to south edge of map. Thicker more continuous sandstone beds contain numerous small and some large uranium deposits*
Jmwr, *Westwater Canyon and Recapture Members*
Jmws, *Westwater Canyon and Salt Wash Members*
Jmt, *Westwater Canyon, Recapture, and Salt Wash Members*

Upper Jurassic — Middle Jurassic — San Rafael Group

Jb

Bluff Sandstone[1]

Light-gray to light-brown fine- to medium-grained eolian crossbedded quartz sandstone. About 300 feet thick near Bluff; thins northward to wedge edge near Blanding; thins southward to about 20 feet

Jj

Junction Creek Sandstone[1]

Lateral equivalent of Bluff Sandstone. Pink or red-dish-orange fine- to coarse-grained poorly sorted eolian crossbedded sandstone. Forms a rounded "slick rim." About 275 feet thick; merges northward with the upper part of Summerville Formation; thins and becomes even bedded to the east and mapped with the Salt Wash Member of the Morrison Formation

Jbs

Bluff Sandstone and Summerville Formation

Js

Summerville Formation[1]

Thin and evenly bedded dark-reddish-brown or gray siltstone, shale, and fine-grained sandstone of marginal marine origin; an irregular zone of concretionary chert, with or without limestone nodules, commonly at top; erodes to ledgy cliffs or, where noncalcareous, to a smooth slope. Thickness variable between 60 and 200 feet but increases generally northwestward. Eastern limit undefined

Jbse

Bluff Sandstone, Summerville Formation, and Entrada Sandstone

Je

Entrada Sandstone[1]

In western and central part of map includes (descending order): Moab Member, white medium-grained crossbedded or flat-bedded well-sorted sandstone; Slick Rock Member, white or reddish- or yellowish-orange thick massive fine- to medium-grained eolian crossbedded quartz sandstone that erodes to prominent rounded cliffs; Dewey Bridge Member, reddish-brown flat-bedded locally contorted earthy siltstone and some flat-bedded white sandstone. In northeast part of map and on the southeast side of the La Plata Mountains, pale- to greenish-gray massive sandstone contains large low-grade vanadium-uranium deposits. Averages about 150 feet thick, but ranges in thickness from 70 to 440 feet

Jse

Summerville Formation and Entrada Sandstone

Jwe

Wanakah Formation and Entrada Sandstone[1]

Wanakah Formation (lateral equivalent of the Summerville Formation) is 25 to 100 feet thick and consists of 3 members (descending order): marl member, greenish-gray to red-brown friable limy sandy siltstone; Bilk Creek Sandstone Member, light-colored friable fine-grained quartz sandstone in thin even beds with a distinctive red chalcedony zone at the top; Pony Express Limestone Member, dark-gray fetid bituminous thin-bedded limestone generally about 10 feet thick, but thins westward to 0 feet within a few miles of the east edge of map

Jjwe

Junction Creek Sandstone, Wanakah Formation, and Entrada Sandstone

Jsec

Summerville Formation, Entrada Sandstone, and Carmel Formation

Jc

Carmel Formation[1]

Dark-reddish-brown to grayish-red evenly thin-bedded silty shale, siltstone, and gray to medium-brown silty sandstone of estuarine or tidal-flat origin; sandstone more abundant in Elk Ridge area. About 100 feet thick; thins and grades laterally eastward into the Dewey Bridge Member of the Entrada Sandstone along Comb Ridge

JŦen

JTRen

Entrada Sandstone and Navajo Sandstone

JTRjk

Junction Creek Sandstone, Summerville Formation, Entrada Sandstone, Navajo Sandstone, and Kayenta Formation

TRIASSIC(?)

Upper Triassic(?) — Glen Canyon Group

JTRn

Navajo Sandstone[1]

White, gray, yellowish-gray, or pale-orange fine-grained well-sorted conspicuously crossbedded eolian quartz sandstone. Along Comb Ridge and on Elk Ridge erodes commonly to rounded cliffs and domes or, where capped by resistant beds, to vertical or recurved cliffs. More than 400 feet thick in western part of map; thins to an irregular wedge edge near the Dolores River

JTRnk

Navajo Sandstone and Kayenta Formation

TRk

Kayenta Formation

Gray, purplish-gray, or grayish-orange-red irregularly bedded fluvial sandstone and siltstone; subordinate mudstone, conglomerate, and limestone. Erodes to steep irregular cliffs and benches. About 200 feet thick on Elk Ridge; thins regularly southeastward to a subsurface pinchout across the center of the map

TRIASSIC

Upper Triassic

TRw

Wingate Sandstone

Reddish- to grayish-orange fine-grained quartzose crossbedded well-cemented eolian sandstone. Forms a prominent sheer cliff, commonly with conchoidal spalls and incipient arches coated with desert varnish. About 450 feet thick in southwest; thins southeastward to a subsurface wedge edge across the center of the map; averages about 250 feet thick

TRcu | TRc | TRcb | TRcbl | TRcl | TRcs

Chinle Formation[1]

Varicolored terrestrial beds, generally fluvial siltstone and conglomeratic sandstone near top, flood-plain or lake-deposited bentonitic mudstone and marly mudstone in the middle, and fluvial conglomeratic sandstone and mudstone in lower part. Thins regularly northward across map from about 1,400 feet thick to about 600 feet. Contains lithologic equivalents and discontinuous thinning wedge edges of named members more readily distinguished in Monument Valley
TRc, *Chinle Formation undivided: in a small area in the Abajo Mountains map unit includes Glen Canyon Group and Moenkopi Formation; in southwest corner of map includes all the Chinle Formation except the Shinarump Member*
TRcu, *upper part: near the top, commonly one or more thick beds of brown crossbedded limy or dolomitic sandstone or pelletal conglomerate; underlain, generally unconformably, by color-banded red, pink, and gray thin-bedded partly limy and tuffaceous mudstone, shale, and minor shaly sandstone. About 500 feet thick. Includes lithologic equivalents of the Hite Bed and the Bowknot bed of local usage, as well as other parts of the Church Rock, the Owl Rock, and Petrified Forest Members in Monument Valley*
TRcl, *lower part: at north end of Comb Ridge discontinuous lenses of pale crossbedded sandstone and conglomeratic sandstone interbedded with gray or reddish-gray mudstone. About 200 feet thick*
TRcb, *Moss Back Member: very pale orange, greenish-yellow, grayish-orange-pink, or pale-yellowish-green crossbedded quartzose sandstone and conglomeratic sandstone containing chert and limestone pebbles and carbonaceous and silicified plant fragments; subordinate gray-green or red massive mudstone lenses; forms a prominent cliff. 50 to 100 feet thick. Northwest of Abajo Mountains, the member is the basal unit of Chinle and there contains uranium deposits. Lenticular and discontinuous southward and not certainly identifiable along most of Comb Ridge south of Whiskers Draw*
TRcs, *Shinarump Member: buff ledge-forming quartzose conglomeratic sandstone. As much as 50 feet thick in channels. Mapped in southwest corner of map only*
TRcbl, *Moss Back Member and lower part: on Elk Ridge includes the Moss Back Member, Monitor Butte Member equivalent, and Shinarump Member equivalent. Monitor Butte Member equivalent: gray-green, bluish-gray, or reddish-brown mudstone, thin contorted beds of brown ripple-laminated calcareous sandstone, and, near base, some channel-fill lenses of coarse-grained quartzose sandstone. Thins northeastward from about 150 feet thick to pinchouts at Bridger Jack Mesa. Shinarump Member equivalent: discontinuous lenses of massive crossbedded ledge-forming quartz sandstone and conglomeratic sandstone as much as 60 feet thick, commonly in channels scoured into underlying rocks; relatively continuous beds only in ancient channel system extending in an arc from southwestern Elk Ridge to the Abajo Mountains. On Elk Ridge, Shinarump equivalent contains significant uranium deposits*

TRkwc

Kayenta Formation, Wingate Sandstone, and Chinle Formation

TRwc

Wingate Sandstone and Chinle Formation

TRd

Dolores Formation

Bright-red to reddish-orange fluvial siltstone, sandstone, and shale; few thin layers of limestone-shingle conglomerate. Local quartz-pebble conglomerate at base may correlate with Moss Back Member of Chinle Formation; discontinuous thin but massive sandstone at top may correlate with Wingate Sandstone. 400 to 850 feet thick; thins northeastward

UNCONFORMITY

TRIASSIC(?) AND TRIASSIC

Lower and Middle(?) Triassic

TRm

Moenkopi Formation[2]

Upper part: brown and reddish-brown even-bedded shaly siltstone, thin flaggy ripple-marked sandstone, and thick massive beds of sandstone; erodes to a ledgy slope
Hoskinnini Member: intercalated thin and commonly contorted beds of reddish-brown fine-grained silty sandstone, containing large scattered brown quartz grains, and of dark-reddish-brown shaly siltstone
Formation thins eastward from 350 feet to a subsurface wedge edge east of Comb Ridge

UNCONFORMITY

PERMIAN

Pc | Pcd | Pco | Pcdo | Pcc | Pch

Cutler Formation[2]

Continental sequence of beds divided in the southwest part of map into units of finer grained nearshore redbeds, alternating with units of paler hued coarser grained generally eolian sandstone
Pc, *Cutler Formation undifferentiated: grayish- to purplish-red or reddish-orange fluvial micaceous arkosic sandstone, siltstone, and conglomerate. As much as 4,000 feet thick in northeast corner of map.*
Pcd, *De Chelly Sandstone Member: light-brown to pale-reddish-brown eolian crossbedded fine- to medium-grained quartz sandstone; poorly cemented with limonite; eroded to cliffs and rounded domes. Thins northward from 400 feet to a pinchout on Comb Ridge about 11 miles north of San Juan River*
Pco, *Organ Rock Tongue: reddish-brown even-bedded siltstone; some thin-bedded fine-grained sandstone. About 650 feet thick on Comb Ridge at south edge of map; thins to 250 feet and becomes more sandy and massive toward Abajo Mountains*
Pcdo, *De Chelly Sandstone Member and Organ Rock Tongue*
Pcc, *Cedar Mesa Sandstone Member: generally thick persistent beds of yellowish-gray to reddish-orange medium- to coarse-grained sandstone and alternating thinner beds of moderate- to dusky-red siltstone; grades southward along Comb Ridge and southeastward into evaporite, banded gray-green and maroon gypsiferous siltstone, silty shale, and friable sandstone. 500 to 1,200 feet thick; thickens northward*
Pch, *Halgaito Tongue: reddish-brown thin-bedded shaly siltstone and very fine grained silty sandstone; some disseminated nodules and beds of gypsum; a few thin lenticular beds of purplish-gray nonfossiliferous limestone near base. As mapped includes some beds of Rico Formation in the Mexican Hat area*

PIPr

Rico Formation[2]

Light-gray fossiliferous thin to thick beds of cherty marine limestone, reddish-brown or greenish-gray fine- to medium-grained fluvial sandstone, and reddish-brown, gray-green, or pale-red-purple micaceous partly gypsiferous siltstone. Erodes to ledgy slopes. About 300 feet thick; 550 feet thick in Mexican Hat area

CARBONIFEROUS — PENNSYLVANIAN

Middle and Upper Pennsylvanian

IPh

Hermosa Formation

Gray and light-brown thick- to thin-bedded fossiliferous cherty marine limestone and dolomite, gray and light-brown fine-grained micaceous crossbedded sandstone and siltstone, dark-gray shale, gypsum, some light-brown and reddish-purple sandy shale and sandstone, and minor amounts of light-brown and gray quartzose conglomerate. As mapped includes metamorphosed chloritic rocks probably of the underlying Lower Pennsylvanian and Mississippian Molas Formation in a small area at Rico. In the subsurface only, includes an upper limestone member, the salt-bearing Paradox Member, and a lower limestone member. Erodes to cliffs and benches and smooth slopes. The entire Hermosa is exposed, though poorly, only at Rico where it is about 1,800 feet thick; in the subsurface it thickens to more than 5,000 feet between northcentral edge and southeast corner of map along the axis of the Paradox Basin

UNCONFORMITY

DEVONIAN AND MISSISSIPPIAN

Upper Devonian and Lower Mississippian

MDlo

Leadville and Ouray Limestones

Interbedded gray, buff, and yellow massive limestone and thin beds of shale and quartzite. 100 to 300 feet exposed at Rico

UNCONFORMITY

CAMBRIAN

Upper Cambrian

Ci

Ignacio Quartzite

Pale-yellow or pink dense evenly thin-bedded quartzite with shale partings. About 200 feet thick in faulted exposures at Rico

UNCONFORMITY

PRECAMBRIAN

p€up

Uncompahgre Formation

Yellowish-gray, locally conglomeratic and crossbedded, glassy quartzite and bluish-gray quartzitic schist. About 350 feet exposed at Rico

Contact

Fault

Dashed where approximately located; dotted where concealed. Bar and ball on downthrown side

Inclined   Horizontal

Strike and dip of beds

Jmw
Jmws   Jms

Limit of deposition of a formation or member, in this case the Westwater Canyon Member of the Morrison Formation

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