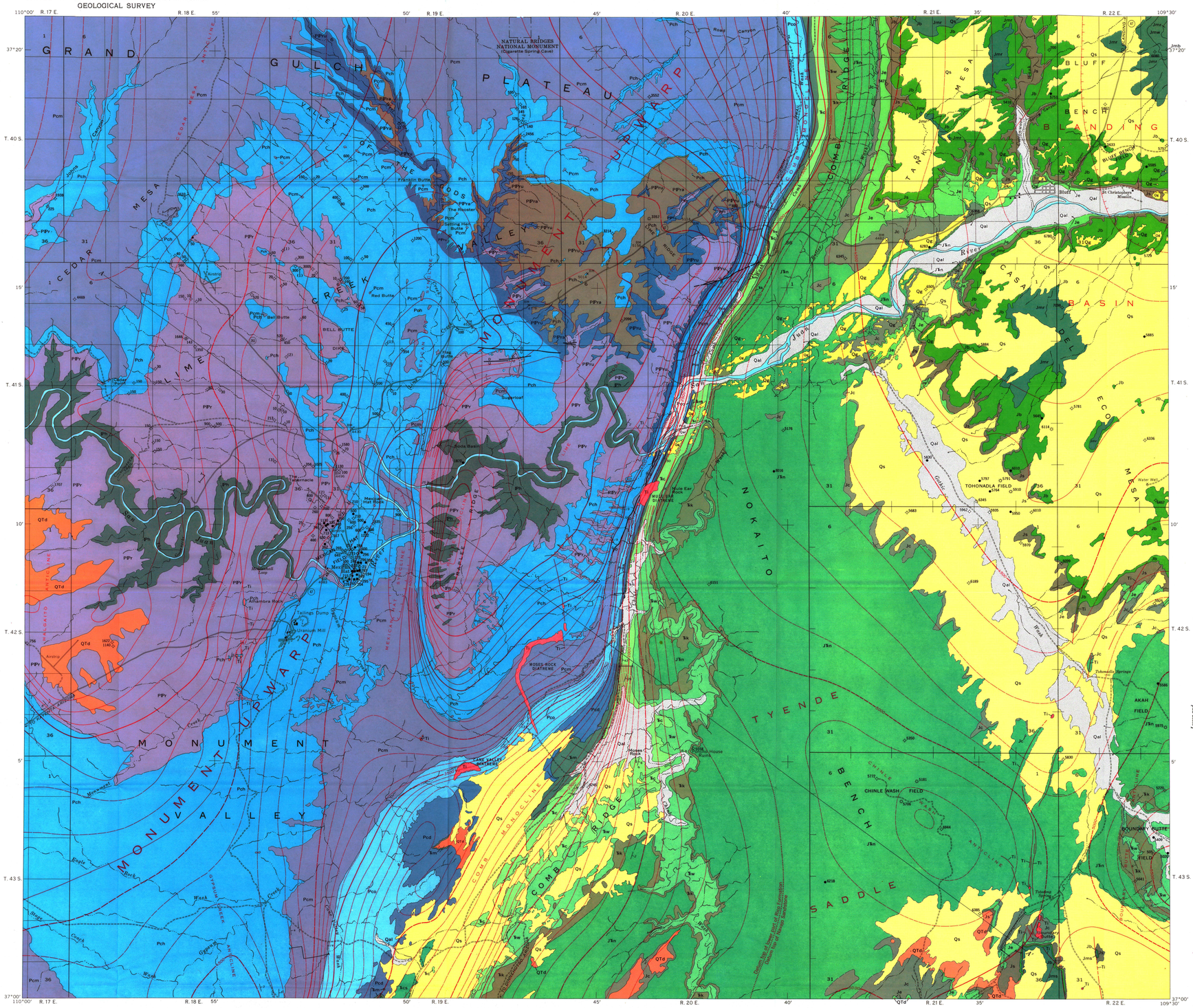
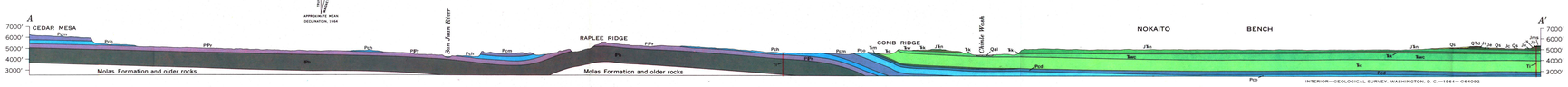



Base compiled from aerial photographs, U.S. Geological Survey topographic quadrangles: Bluff 3 SE, Bluff 3 SW, 1952, and from a map by J. D. Sears, 1956




# GEOLOGIC MAP AND SECTION OF THE CEDAR MESA-BOUNDARY BUTTE AREA, SAN JUAN COUNTY, UTAH

SCALE 1:62 500

1 ½ 0 1 2 3 4 5 MILES

1 .5 0 1 2 3 4 5 KILOMETERS

DATUM IS MEAN SEA LEVEL

## EXPLANATION

### QUATERNARY

**Qal** — **Alluvium**
*Unconsolidated surficial deposits of valley fill; mainly stream-deposited silt, sand, and gravel, but includes some windblown sand and, locally, low-level terrace gravels*

**Qs** — **Dune sand**
*Windblown deposits of sand, mostly on upland surfaces*

**Qg** — **Terrace gravel**
*Veneer of unconsolidated gravel and sand on stream-cut terrace surfaces; shown only along and near the San Juan River*

### TERTIARY OR QUATERNARY

**QTd** — **Sedimentary deposits**
*Tan and brown shaly and silty unconsolidated sandstone and interbedded conglomerate. Caliche caps deposits at most localities*

UNCONFORMITY

### TERTIARY

**Ti** — **Intrusive rocks**
*Dikes, plugs, and irregular masses of minette. Also includes related diatremes or volcanic vents containing, in varying proportions, blocks of sedimentary, metamorphic, and igneous rocks set, at some diatremes, in a matrix of tuff breccia or serpentine tuff*

UNCONFORMITY

### JURASSIC

Upper Jurassic — San Rafael Group

**Jmb, Jmw, Jmr, Jms** — **Morrison Formation**
*Jmb, Brushy Basin Member; variegated shale and a few thin sandstone beds.*
*Jmw, Westwater Canyon Member; grayish-yellow and yellowish-brown fine- to coarse-grained sandstone and interbedded greenish-gray and olive-gray shale.*
*Jmr, Recapture Member; dark reddish-brown siltstone and shale and buff fine- to medium-grained sandstone.*
*Jms, Salt Wash Member; white and grayish-orange fine- to medium-grained sandstone and interbedded greenish-gray and grayish-red shale*

**Jb** — **Bluff Sandstone**
*Tan and buff very fine to medium-grained sandstone; in part crossbedded*

Middle Jurassic

**Js** — **Summerville Formation**
*Dark reddish-brown siltstone and shale and interbedded white and tan fine- to medium-grained sandstone*

**Je** — **Entrada Sandstone**
*Reddish-brown and reddish-orange fine-grained sandstone and silty sandstone*

**Jc** — **Carmel Formation**
*Dark reddish-brown shale and interbedded sandstone*

UNCONFORMITY

Upper Triassic(?) — Glen Canyon Group

**J̶Ŧn** — **Navajo Sandstone**
*Massive grayish-orange and buff very fine to fine-grained crossbedded sandstone*

**Ŧk** — **Kayenta Formation**
*Reddish-orange, white and pale-red very fine to coarse-grained sandstone and reddish-brown shale*

Upper Triassic

**Ŧw** — **Wingate Sandstone**
*Massive, reddish-brown and reddish-orange very fine to fine-grained crossbedded sandstone*

**Ŧc, Ŧcs** — **Chinle Formation**
*Ŧc, undifferentiated Chinle Formation; reddish-orange siltstone and sandstone; pale-red, pale-blue, and brown shale; pale-red sandstone; and gray and greenish-gray limestone.*
*Ŧcs, Shinarump Member; buff conglomeratic sandstone*

UNCONFORMITY

Lower and Middle(?) Triassic

**Ŧm** — **Moenkopi Formation**
*Dark reddish-brown siltstone and shale and interbedded reddish-brown and buff very fine to coarse-grained sandstone*

**Ŧwc** — **Wingate Sandstone and Church Rock Member of Chinle Formation**
*Shown only on cross section east of Comb Ridge*

TRIASSIC(?) AND JURASSIC — TRIASSIC — TRIASSIC(?) AND TRIASSIC

UNCONFORMITY (?)

### PERMIAN

**Pcd, Pco, Pcm, Pch** — *** Cutler Formation**
*Pcd, De Chelly Sandstone Member; massive light-tan and pale reddish-brown crossbedded sandstone.*
*Pco, Organ Rock Tongue; dark reddish-brown siltstone, sandy siltstone, and very fine grained sandstone.*
*Pcm, Cedar Mesa Sandstone Member; on Cedar Mesa consists of buff thick-bedded massive sandstone and some interbedded reddish-brown siltstone; along Comb Ridge grades into variegated siltstone and shale and some buff sandstone, gray limestone, and gypsum.*
*Pch, Halgaito Tongue; reddish-brown siltstone and very fine grained silty sandstone containing thin lenses of gray limestone*

### PENNSYLVANIAN AND PERMIAN

**PIPra, PIPru, PIPy** — *** Rico Formation**
*PIPra, the A limestone; light-gray, fossiliferous; present only in Lime Ridge area. (Locally in steep slopes and along Comb Ridge the A limestone is shown as a line).*
*PIPru, upper part of Rico Formation; reddish-brown siltstone and shale.*
*PIPy, lower part of Rico Formation; reddish-brown siltstone and shale and interbedded gray sandy fossiliferous limestone and buff limy sandstone*

### PENNSYLVANIAN — CARBONIFEROUS

**IPh** — **Hermosa Formation**
*Gray cherty limestone, buff fine-grained sandstone, gray and greenish-gray siltstone and shale, and, locally, some white gypsum*

**Contact**
*Dashed where approximately located*

**Fault**
*Dashed where approximately located; dotted where concealed. U, upthrown side; D, downthrown side*

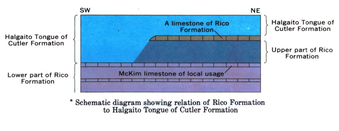
**Structure contours**
*Drawn on top of lower part of Rico Formation in western part of area and on top of Navajo Sandstone in eastern part of area. Long dashes indicate less accurate control; short dashes indicate datum is above surface of ground; hachures indicate closed basin. Interval 100 feet except along steeper folds, where interval is 500 feet. Datum is mean sea level*

**Line of stratigraphic section**
*(Referred to in text)*

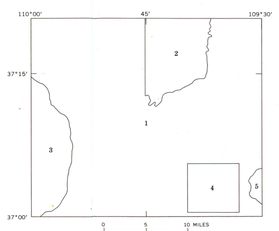
**Strike and dip of beds**

Oil well — Gas well — Dry hole

*Wells are producing, shut down, or abandoned. Figure shown total depth in feet. Number in parentheses refers to corresponding number in list of wells drilled and indicates that total depth is not known*




* Schematic diagram showing relation of Rico Formation to Halgaito Tongue of Cutler Formation




INDEX MAP SHOWING SOURCES OF GEOLOGIC AND STRUCTURE CONTOUR DATA

Geologic data:
1, 3, 4, 5 O'Sullivan, R. B., and Robison, R. A., U.S.G.S. detailed and reconnaissance mapping
2 Sears (1956) modified in part by O'Sullivan and Robison

Structure contour data:
1 O'Sullivan, R. B., and Robison, R. A., U.S.G.S. detailed and reconnaissance mapping
2 Sears (1956), modified in part by O'Sullivan and Robison
3 Baker (1936)
4 Turner (1958, p. 269)
5 Spragg (1952, p. 105)

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—1964—G64092