DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-1882

Base from U.S. Geological Survey, 1952

Geology mapped in 1980-84

SCALE 1:24 000

1 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 0 1 KILOMETER

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLE LOCATION

PRELIMINARY GEOLOGIC MAP OF THE ANVIL POINTS QUADRANGLE, GARFIELD COUNTY, COLORADO

By
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1986

CORRELATION OF MAP UNITS

Qac, Qal, Qau	Holocene	QUATERNARY	
Qt			
Qp			
Tub	Eocene	TERTIARY	
Tgj, Tuc, Tgp, Tua, m			
Tgp			
Tga			
Tw	Eocene and Paleocene		

DESCRIPTION OF MAP UNITS

Qac RIVER ALLUVIUM (HOLOCENE)--Unconsolidated deposits of sand, silt, and gravel in channel of Colorado River in southeastern part of quadrangle

Qal LOCAL ALLUVIUM (HOLOCENE)--Unconsolidated poorly sorted deposits of valley fill in the Sharrard Park area in southeastern part of quadrangle. Deposits are locally derived and slope towards the alluvium of the Colorado River

Qau UPLANDS ALLUVIUM (HOLOCENE)--Unconsolidated deposits of sand and silt filling valleys on top of Roan Plateau. Forms narrow elongate clear areas in wooded uplands. Only the most conspicuous deposits are shown

Qt TERRACE GRAVELS (HOLOCENE)--Unconsolidated, poorly sorted pebbles, cobbles, and boulders in a sandy matrix that is covered with a veneer of brown soil. Forms a terrace deposit 80-100 ft above Colorado River. Thickness probably less than 20 ft. Only exposed in a narrow outcrop belt in southeastern corner of quadrangle. Terrace is more extensive in quadrangle to the south (Yeend and Donnell, 1960)

Qp PEDIMENT DEPOSITS (PLEISTOCENE)--Unconsolidated, poorly sorted, sand, silt, and gravel containing angular pebbles, cobbles, and boulders of sandstone and marlstone derived from nearby hills. Forms a veneer that slopes toward nearby drainages. Thickness probably less than 50 ft

UINTA FORMATION (EOCENE)--Units A and B are southward extending tongues of the Uinta Formation, which merge with the main body of the Uinta north of the Anvil Points quadrangle. The lithology of the Uinta is variable and reflects a change from the lacustrine environment of the partly underlying and partly intertonguing Parachute Creek Member of the Green River Formation to the fluvial and deltaic environment of the Uinta Formation

Tub Unit B--Light-brown to light-gray very fine to coarse-grained tuffaceous and argillaceous sandstone and siltstone and minor beds of gray and green mudstone and shale and light-gray marlstone. Some sandstone and siltstone beds are resistant to erosion and form cliffs; others are friable and weather to slopes. Sandstone beds contain quartz and varying amounts of rock fragments, clay, biotite, and heavy minerals. Total thickness of unit B in the quadrangle is about 600 ft, but the exposed surface of the formation is present-day erosion surface

Tua Unit A--Brown to dark-orange-brown fine-grained tuffaceous sandstone. Thickness ranges from 25 to 75 ft along Northwater Creek in northern part of quadrangle, to less than 10 ft along drainage of East Fork of Parachute Creek. Unit A wedges out in Grassy Gulch in NE1/4 sec. 3, T. 6 S., R. 95 W. It is present in the Cottonwood Point area, but is mapped there with the Parachute Creek Member of Green River Formation (Tgp)

Tuc Unit C--In Glover Park area, units A and B cannot be separated and are mapped together because intervening marlstone at Jackrabbit Ridge (Tgj) of Green River Formation is poorly developed. Thickness about 200 ft

GREEN RIVER FORMATION (EOCENE)

Tgj Marlstone at Jackrabbit Ridge--Informally named for exposures on Jackrabbit Ridge located in the Circle Dot Gulch quadrangle (Hail, 1982), which lies west of the Anvil Points quadrangle. Light-gray to light-brown poorly laminated marlstone, weathering very light gray. Includes minor thin oil shale, some marly siltstone and thin fine-grained sandstone beds and some interbedded tuffs. Fossil insect and plant remains are present locally along bedding planes. Marlstone at Jackrabbit Ridge is mostly of lacustrine origin. Thickness 55-100 ft.
Marlstone at Jackrabbit Ridge merges with Parachute Creek Member (Tgp) along East Fork of Parachute Creek in western part of quadrangle. In Glover Park area marlstone at Jackrabbit Ridge is very sandy and is obscured on the outcrop and could not be mapped separately. In U.S. Bureau of Mines Naval Reserve No. 1 Core hole C (map no. 14), the interval from 5 to 45 ft below well collar is marly, includes a thin, rich oil-shale bed, and represents the marlstone at Jackrabbit Ridge

Tgp Parachute Creek Member--Massive to platy marlstone, weathering light gray, and beds of gray, dark-brown, and bluish-gray oil shale. Contains numerous thin yellowish-brown tuff beds and a few beds of siltstone and sandstone. Parachute Creek Member is mostly of lacustrine origin. Thickness about 700 ft in eastern part of quadrangle and about 1,200 ft in southwestern part of quadrangle

-m- Top of Mahogany ledge at surface--A rich oil-shale zone in the Parachute Creek Member, which is termed the Mahogany zone in the subsurface. Anvil Points oil-shale mines, 2 mi northwest of the settlement of Anvil Points, are in the Mahogany ledge. Thickness about 60 ft on outcrop at head of Second Anvil Creek and about 130 ft thick in subsurface in northwestern part of quadrangle

Tga Anvil Points Member--Mostly light gray, light tan, and dark brown, fine- to coarse-grained, locally conglomeratic sandstone and interbedded gray and tan siltstone and shale. Minor light-tan and yellowish-gray ostracodal limestone; contains a few beds of marlstone in the upper part. Top of member interfingers with base of Parachute Creek Member (Tgp). Weathers to steep slopes and low cliffs. Thickness is 1,530 ft at type locality in secs. 12 and 13, T. 6 S., R. 95 W. (Donnell, 1961, p. 851). Anvil Points Member is mainly of fluvial origin

Tw WASATCH FORMATION (EOCENE AND PALEOCENE)--Variegated ochre, purple, red, gray, lavender, and yellow shale, silty shale, and siltstone, and brown and gray lenticular fine- to coarse-grained sandstone. Minor conglomerate, limestone, coal, and carbonaceous shale. Forms slopes and low cliffs. Thickness about 5,300 ft (Donnell, 1961, p. 846) but only upper 1,500 ft exposed in quadrangle. Wasatch Formation is of fluvial and paludal origin

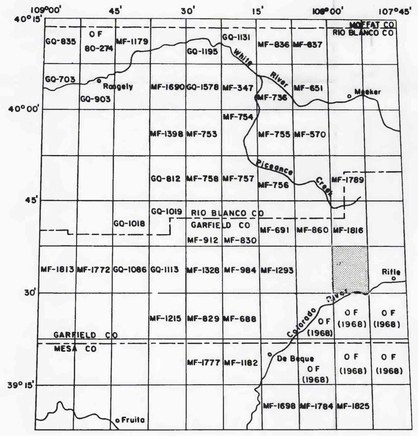
CONTACT--Varies from well exposed to locally obscured or concealed by soil or vegetation

INTERTONGUING CONTACT--Drawn where contact abruptly changes position

ARBITRARY CONTACT--Drawn where Uinta Formation cannot be divided

8400 STRUCTURE CONTOURS--Drawn on top of Mahogany zone or ledge. Contour interval 100 ft

1 DRILL HOLE--See table for description



INDEX MAP SHOWING LOCATION OF THIS QUANDRANGLE (PATTERNED) AND OTHER PUBLISHED U.S. GEOLOGICAL SURVEY 7½-MINUTE GEOLOGIC MAPS IN THE PICEANCE CREEK BASIN AREA, NORTHWESTERN COLORADO. PUBLISHED USGS MAPS INCLUDE GEOLOGIC QUADRANGLE MAPS (GQ), MISCELLANEOUS FIELD STUDIES MAPS (MF), AND OPEN-FILE REPORTS (OF).

REFERENCES

Donnell, J. R., 1961, Tertiary geology and oil-shale resources of the Piceance Creek basin between the Colorado and White Rivers, northwest Colorado: U.S. Geological Survey Bulletin 1082-L, p. 835-891.

Hail, W. J., Jr., 1982, Preliminary geologic map of the Circle Dot Gulch quadrangle, Garfield County, Colorado: U.S. Geological Survey Miscellaneous Field Studies Map MF-1293, scale 1:24,000.

Yeend, W. E., and Donnell, J. R., 1960, Geologic map of the Rulison quadrangle, Garfield County, Colorado: U.S. Geological Survey Open-file report, scale 1:24,000.

Table of drill holes used in evaluation of oil-shale in Anvil Points quadrangle, Colorado

Map no.	Drill hole	Section	Total depth (feet)
	T. 5 S., R. 95 W.		
1	TRW 41X-13, no. 18	NE1/4 13	1,624
2	U.S. Bureau of Mines, Naval Reserve No. 1, core hole 26	SE1/4 36	1,037
	T. 5 S., R. 94 W.		
3	U.S. Bureau of Mines, Naval Reserve No. 1, core hole 21	SE1/4 19	1,624
4	U.S. Bureau of Mines, Naval Reserve No. 1, core hole I	NW1/4 20	870
5	U.S. Bureau of Mines, Naval Reserve No. 1, core hole 22	SW1/4 21	1,500
6	U.S. Bureau of Mines, Naval Reserve No. 1, core hole L	NW1/4 22	725
7	U.S. Bureau of Mines, Naval Reserve No. 1, core hole M	NE1/4 22	647
8	U.S. Bureau of Mines, Naval Reserve No. 1, core hole J	NW1/4 24	635
9	TRW 34X-32, No. 24	SE1/4 32	937
10	U.S. Bureau of Mines, Naval Reserve No. 1, core hole 25	NE1/4 34	774
	T. 6 S., R. 95 W.		
11	Mobil Oil Company, core hole B	NW1/4 10	886
12	U.S. Bureau of Mines, Naval Reserve No. 1, core hole A	SW1/4 12	757
13	U.S. Bureau of Mines, Naval Reserve No. 1, core hole B	NW1/4 12	619
14	U.S. Bureau of Mines, Naval Reserve No. 1, core hole C	NW1/4 12	1,651
15	U.S. Bureau of Mines, core hole D-5 (Drilled inside a mine)	SW1/4 12	112
16	Mobil Oil Company, core hole A	NW1/4 14	791

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