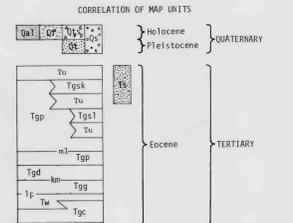
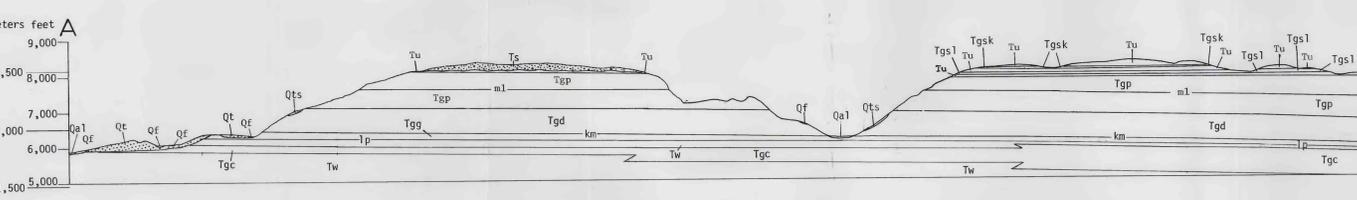




Base from U.S. Geological Survey, 1970

Geology mapped by Ronald C. Johnson 1977, 1980.
Assisted by Bruce Douglas, 1977 and
Vito Nuccio, 1980



DESCRIPTION OF MAP UNITS

Qa1 ALLUVIAL DEPOSITS (HOLOCENE)—Found on flood plains of major size. Holocene.

Qf ALLUVIAL FAN DEPOSITS (HOLOCENE)—Dominant type of alluvium. Most of valley bottoms of major streams covered with colluvial fan deposits from distributary gullies and channels.

Qts TALUS AND FLOPPERS DEPOSITS (HOLOCENE)—On steep slopes; grades laterally into alluvial fan deposits.

Qe SLIMP AND LANDSLIDE DEPOSITS (HOLOCENE AND PLEISTOCENE)—Common at base of steep canyon walls; some slopes partially buried by Pleistocene terrace deposits.

Qm TERRACE DEPOSITS (PLEISTOCENE)—Most conspicuous level 300-400 feet (90-120 m) above present valley floor. Dip away from canyon walls.

Tu UINTA FORMATION (EOCENE)—Mostly brown and gray, poorly bedded to massive, noncalcareous to moderately calcareous sandstone, siltstone, and mudstone, with thin layers composed of typical Parachute Creek Member lithologies such as marlstone and silty marlstone, and minor oil shale. Inter tongues with Green River Formation.

Ts SLIMP DEPOSIT (EOCENE)—Found only on Brush Mountain; highly contorted Uinta Formation and tongue of Green River Formation; contorting rock plane before sediment lithified.

Tgs GREEN RIVER FORMATION (EOCENE)

Tgp Marlstone tongue at Shimmer Ridge—Mostly buff-weathering, well-laminated marlstone; usually contains one 7-15 cm thick, rich oil-shale bed 4-9 m from top. Locally includes zones of massive mudstone typical of the Uinta Formation. Unit is silty, not well laminated on Brush Mountain. Grades into Uinta Formation on northeast part of Brush Mountain. Joins Parachute Creek Member in southeastern part of quadrangle. From 4-20 m thick, thickens irregularly to southeast.

Tgk Marlstone tongue at Sleepy Ridge—Mostly marlstone and lean to moderately rich oil shale in southeastern part of quadrangle; grades to northeast into marlstone interbedded with massive gray and brown mudstone typical of Uinta Formation. Joins Parachute Creek Member in central part of quadrangle. Lower part of marlstone at Sleepy Ridge sags as marlstone at Bull Fork in Figure Four Spring quadrangle to north. From 15-35 m thick, thickens irregularly to southwest.

Tgd Parachute Creek Member—From base of Mahogany ledge to top of member, mostly lean to rich oil shale. Below Mahogany ledge, oil shale is interbedded marlstone and silty marlstone. Oil shale varies from well laminated to brecciated. Brecciated oil shale contains clasts of marlstone and siltstone and typically shows signs of soft-sedimentation. This-gray, massive siltstone beds present between top of R-4 rich oil-shale zone and base of R-6 rich oil-shale zone. Distinguished from underlying Douglas Creek Member by a much greater number of oil-shale beds and a lack of stromatolites. Base of Parachute Creek Member is approximate base of R-4 rich oil-shale zone. About 280-370 m thick, thickens generally to north.

Tm Mahogany ledge (Mahogany zone in subsurface)—Rich oil-shale unit in Parachute Creek Member. Line on map shows top of ledge. About 18-28 m thick, thickens to northeast.

Td Douglas Creek Member—Mostly olive-gray calcareous mudstone and gray sandstone and siltstone with some ostracodal, mollitic and algal limestone, and a few, thin, oil-shale beds. Oil-shale beds typically brecciated and in many cases occur draped over top of this stromatolite layers. Sandstones and siltstones typically 1 m thick or less; however, one sandstone as much as 10 m thick occurs about 45 m above base of member along south side of Brush Mountain. Bedding features observed in this sandstone include parallel-horizontal to low-angle cross laminae, troughs as high as 1 m, and asymmetrical ripple laminae. Base of member is tuff bed at Kimball Mountain, which is approximately the top of clay-rich oil shale of Garden Gulch Member below. About 165-230 m thick, thickens to north.

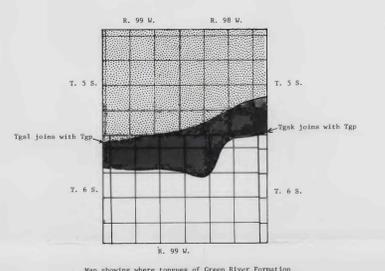
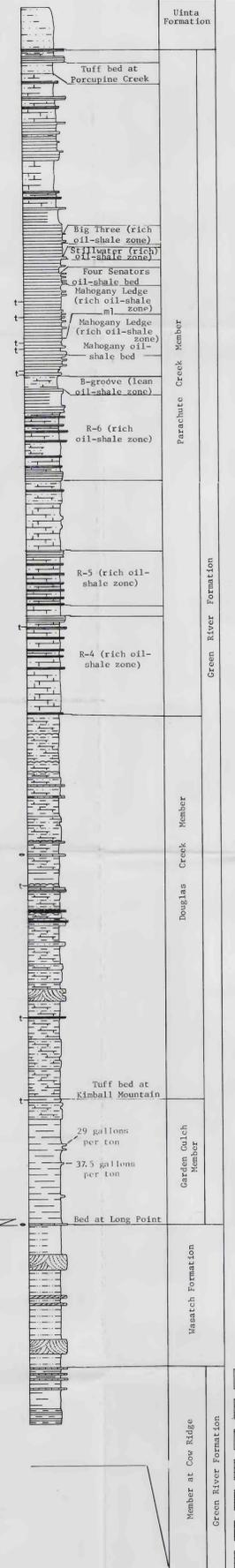
km Tuff bed at Kimball Mountain—Poorly bedded tuff as much as 5 m thick; consists of sandstone which is partially replaced by spotty calcite crystals. Purple and gray on fresh surface, and rust-brown where weathered; locally discontinuous.

Tg Garden Gulch Member—Mostly papery fissile, laminated dark-gray to black, kerogen-rich clay shale with minor marlstone and silty marlstone. Two thin zones shown on measured section yielded 29 and 37.5 gallons of oil per ton with Fischer assay. About 60 m thick. Marker bed at Long Point—A widespread transgressive unit found throughout southwest Fincance Creek Basin. In Desert Gulch quadrangle, bed is an ostracodal limestone about 10-40 cm thick which locally contains *Comichasma* and *Viviparus* gastropods.

lp Member at Low Ridge—Mostly dark gray clay shale, dark-brown carbonaceous clay shale, and thin coal beds with a few thin sandstone and siltstone beds. Coal beds usually less than 10 cm thick. Gastropods and mollusks locally abundant. Only upper part of tongue is exposed along Roan Creek in southern part of quadrangle.

tw TONGUE OF WASATCH FORMATION (EOCENE)—Mostly purple, maroon, and gray, massive mudstone with a few lenticular sandstone units. Sandstones are fine to medium grained, trough crossbedded, and as much as 10 m thick. About 10 m thick where exposed in southern part of quadrangle.

Measured section from south side of Eby Point (Secs 23, 26, and 27, T. 6 S., R. 99 W.)



List of drill holes in Desert Gulch Quadrangle
(Leaders (---) indicate data not available)

Map No.	USGS corehole file no.	Location sec.	T.S.	R.W.	Name	Total depth ft	m
1	C-91	9	5	98	Pacific Oil Co. Corehole Syndicate no. 2	330	161
2	---	14	5	98	Texaco Oil Co. Corehole A-4 Debeque	---	---
3	---	19	5	98	Texaco Oil Co. Corehole A-2 Debeque	---	---
4	---	33	5	98	Texaco Oil Co. Corehole A-3 Debeque	---	---
5	---	27	5	99	Texaco Oil Co. Corehole B-1 Debeque	---	---
6	---	5	6	99	Texaco Oil Co. Corehole C-2 Debeque	---	---
7	---	15	6	99	Texaco Oil Co. Corehole C-1 Debeque	---	---
8	C-104	13	6	100	Victor Gallagher Corehole Gallagher	417	128

EXPLANATION

Flat-bedded or massive sandstone	Kerogen-rich clay shale	Algal stromatolites
Crossbedded sandstone	Oil shale (kerogen-rich silty dolomitic limestone)	Partially covered
Siltstone	Dolomitic and calcareous claystone	● Oolites and ostracodes
Claystone	Dolomitic and calcareous silty claystone	t Tuff beds
Silty claystone	Dolomitic and calcareous siltstone	--- Offset in section
Carbonaceous shale and thin coal beds	Silty dolomitic limestone	
Variegated mudstone	Limestone	

PRELIMINARY GEOLOGIC MAP OF THE DESERT GULCH QUADRANGLE, GARFIELD COUNTY, COLORADO

By
Ronald C. Johnson
1981