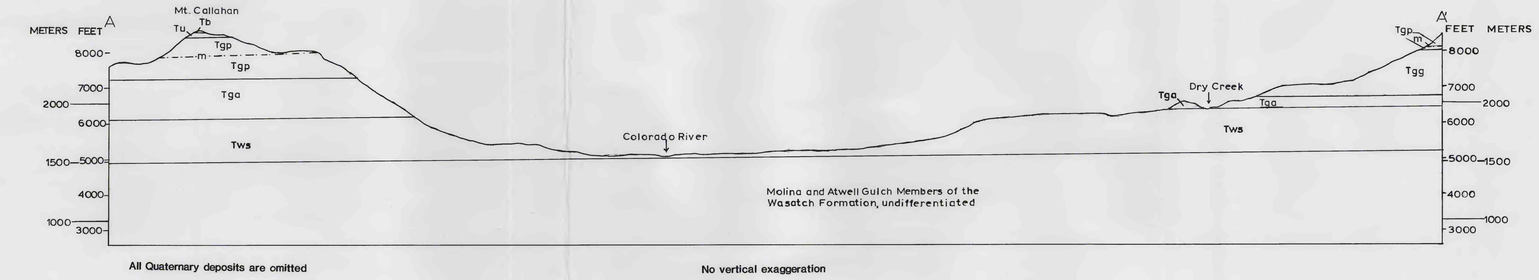
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-1883

Base from U.S. Geological Survey, 1962

SCALE 1:24 000
1 ½ 0 1 MILE
1 .5 0 1 KILOMETER
CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Surficial geology modified from mapping by W. E. Yeend, 1963-1965; bedrock geology mapped by J. R. Donnell, 1963



All Quaternary deposits are omitted

No vertical exaggeration

CORRELATION OF MAP UNITS

Qalc	Qal	Qes		Holocene	QUATERNARY
Qga	Qgmf	Qsl	Qp		
	Qla			Pleistocene	
	Qoa				
	Qop				
UNCONFORMITY					
	Tb			Miocene	TERTIARY
UNCONFORMITY					
	Tu			Eocene	
	Tgp m				
	Tgg / Tga				
	Tws				

DESCRIPTION OF MAP UNITS

[Note: Descriptions of the surficial deposits of the Grand Valley quadrangle are included in a detailed report on the Quaternary geology of the Grand and Battlement Mesas, Colorado, by Yeend (1969)]

Qalc ALLUVIUM OF COLORADO RIVER (HOLOCENE)--Mud, silt, sand, and gravel along present lowermost floodplain of Colorado River. Gravel clasts are composed of more than 50 percent crystalline rocks derived from a distant easterly source

Qal ALLUVIAL AND FLOODPLAIN DEPOSITS (HOLOCENE)--Mud, silt, sand, and gravel. Locally derived coalescing fan deposits and sheet-wash deposits along Colorado River and Parachute Creek; also contains well-rounded, well-sorted, nonlocally derived crystalline rocks along Colorado River. May contain some reworked alluvium of Pleistocene age

Qes EARTHFLOW AND SOIL CREEP DEPOSITS (HOLOCENE)--Poorly sorted boulder, cobble, and pebble gravel in a matrix of greenish-gray sandy silt. Contains some basalt boulders derived from older till, landslide, and colluvium deposits, and angular fragments of sandstone, siltstone, and claystone derived from Wasatch and Green River Formations. Maximum thickness about 30 ft (9 m)

GRAND MESA FORMATION (PLEISTOCENE--Probably time of Pinedale(?) glaciation)

Qga Alluvial terrace and fan deposits--Silt, sand, and gravel. Pebble, cobble, and boulder gravel includes both locally derived sedimentary rocks and basalt, and crystalline rocks of distant easterly source. Reddish-brown wind-blown sand and silt locally mantle terrace surfaces. Terraces lie about 100-200 ft (30-60 m) above Colorado River. Maximum thickness about 160 ft (49 m)

Qgmf Mudflow and fan gravel deposits--Pebble, cobble, and boulder gravel in a gray matrix of coarse sand; poorly sorted; clasts primarily unweathered basalt, but contains some sandstone, marlstone, siltstone, and claystone. Derived largely from solifluction deposits east of quadrangle

Qsl SOLIFLUCTION DEPOSITS (PLEISTOCENE)--Soil, basalt boulders, and unconsolidated material moved downslope by gravity. Only one small patch on east side of Grand Valley quadrangle, but deposits are extensive to the east in the Rulison 7 1/2-minute quadrangle

Qp PEDIMENT GRAVEL DEPOSITS (PLEISTOCENE)--Angular to subrounded slabby pebble and cobble gravel of sandstone, siltstone, and marlstone derived from the Wasatch and Green River Formations. Pediment is commonly mantled by a thin veneer of reddish-brown wind-blown sand and silt. Only occurs north of Colorado River. Thickness 5-40 ft (1.5-12 m)

LANDS END FORMATION (PLEISTOCENE--Probably time of Bull Lake(?) glaciation)

Qla Alluvial terrace and fan gravel deposits--Grayish-brown sandy gravel of basalt and locally derived slabby siltstone, marlstone, and sandstone; moderately to poorly sorted; poorly stratified; rock fragments angular to well rounded. Maximum thickness 200 ft (61 m)

OLDER DEPOSITS (PLEISTOCENE--Pre-Bull Lake(?) age)

Qoa Alluvial terrace and fan gravel deposits--Pebble, cobble, and boulder gravel; nearly equal amounts of basalt and sedimentary rock fragments of locally derived sandstone, claystone, and marlstone. Matrix is greenish-gray silty sand. Reddish-brown wind-blown sand and silt locally mantle terrace surfaces. Ranges in thickness from 10 to 60 ft (3 to 18 m)

Qop Pediment gravel deposits--Subangular to subrounded pebble, cobble, and boulder gravel. Locally derived basalt boulders as much as 8 ft (2.5 m) in diameter are common near steep slopes of Battlement Mesa. Oil shale, siltstone, sandstone, and claystone derived from the Wasatch and Green River Formations make up much of the gravel. Surface is generally covered with a thin patchy layer of reddish-brown wind-blown sand and silt. Lowermost margins about 600 ft (180 m) above Colorado River. Maximum thickness about 280 ft (85 m)

Tb BASALT (MIOCENE)--Erosional remnant of basalt flow that covers Grand and Battlement Mesas. Occurs only on summit of Mt. Callahan near western edge of quadrangle

Tu UINTA FORMATION (EOCENE)--Light-brown and gray sandstone and gray marlstone and siltstone. Contains pelecypods, gastropods, and ostracodes. Exposed only on Mt. Callahan in western part of quadrangle. About 200 ft (61 m) thick

GREEN RIVER FORMATION (EOCENE)

Tgp Parachute Creek Member--Gray-weathering, black, brown, and gray marlstone, including oil shale, that locally forms cliffs. Contains minor amounts of light-gray siltstone and brown fine- to medium-grained sandstone and numerous thin persistent analcite and tuff beds. Maximum thickness about 1,200 ft (366 m)

-m- Mahogany oil-shale bed--Outcrop of rich oil shale bed. Located 500-700 ft (152-213 m) above base of Parachute Creek Member. Thickness 2-5 ft (0.6-1.5 m)

Tgg Garden Gulch Member--Light-gray barren marlstone, dark-brown to black papery clay shale (oil shale of varying grade), light-gray oolitic limestone and sandstone, light-gray algal limestone, and some massive brown fine- to medium-grained sandstone. Maximum thickness about 1,200 ft (366 m)

Tga Anvil Points Member--Fine- to coarse-grained, gray and brown sandstone, minor amounts of gray siltstone, marlstone, and oolitic, ostracodal, and algal limestone, and a few tan low-grade oil-shale beds. Thickness 300-1,100 ft (91-335 m)

WASATCH FORMATION (EOCENE AND PALEOCENE)

Tws Shire Member (Eocene)--Variegated (purple, lavender, gray, and brown) claystone; minor beds of fine- to medium-grained sandstone. Maximum thickness of exposed rocks about 1,200 ft (366 m)

——— CONTACT--Approximately located where obscured by soil cover or vegetation

2☼ GAS WELL--Number keyed to table 1

12○ DRILLING WELL--Number keyed to table 1

—6200— STRUCTURE CONTOUR--Drawn on top of Wasatch Formation. Contour interval 100 ft (30.5 m)

A-A' CROSS-SECTION LINE

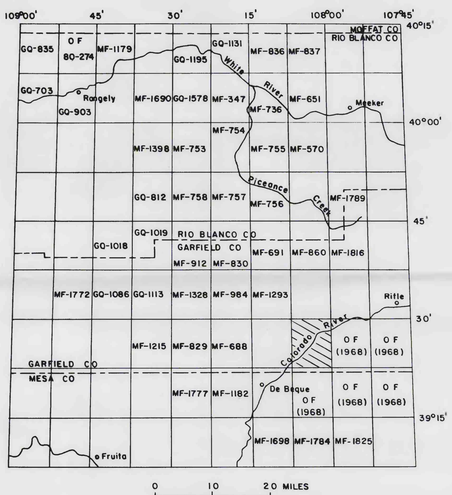
Note: The name of the town of Grand Valley has been changed to Parachute. The quadrangle name will probably also be changed at a later date.

REFERENCE CITED

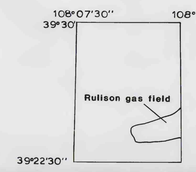
Yeend, W. E., 1969, Quaternary geology of the Grand and Battlement Mesas area, Colorado: U.S. Geological Survey Professional Paper 617, 50 p.

TABLE 1.--Drill-hole data for gas wells in the Grand Valley quadrangle, Colorado

Drill-hole number (on map)	Section	Company and name	Total depth Feet	Meters
		T. 6 S., R. 95 W.		
1	32	Barrett Energy, W-3 Grand Valley------	2,000	610
2	33	Barrett Energy, #2 Grand Valley-------	4,000	1,219
		T. 7 S., R. 95 W.		
3	4	Barrett Energy, W-6 Knight------------	2,200	671
4	4	Barrett Energy, W-11-4 Knight---------	2,773	845
5	9	Northwest Explor., Battlement #1-------	8,100	2,469
6	29	Astral Oil, #29-95A-----	7,016	2,138
7	29	Southern Union Prod., #29-95----------	6,509	1,984
8	30	Superior Oil, 30-11 Fed.	7,293	2,223
9	30	Southern Union Prod., #30-95----------	7,124	2,171
10	31	Kenai Oil and Gas, Inc., D-31-7-95-S Fed.------	7,156	2,181
		T. 7 S., R. 96 W.		
11	3	Barrett Energy, #1 Grand Valley-------	7,288	2,221
12	10	Barrett Energy, #2 Grand Valley Fed.--	7,385	2,251
13	25	Kenai Oil & Gas, Inc., Federal H-25-7-96-S---	7,550	2,301



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).



Index to gas fields in the Grand Valley quadrangle, Colorado

PRELIMINARY GEOLOGIC MAP OF THE GRAND VALLEY QUADRANGLE, GARFIELD COUNTY, COLORADO

By

John R. Donnell, Warren E. Yeend, and Marjorie C. Smith

1986

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1986

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