

GENERALIZED COLUMNAR SECTION					
SYSTEM	SERIES	STRATIGRAPHIC UNITS	LITHOLOGY	DESCRIPTION	
QUATERNARY	Pleistocene and Recent	Alluvium, colluvium		Clay, silt, and unconsolidated sand. 1 to 50 feet.	
		Terrace gravels		Mainly quartzite cobbles and pebbles, some volcanic and metamorphic rocks and some red and gray chert. 1 to 25 feet.	
TERTIARY	Eocene	Evacuacion Creek Member		Sandstone, light-greenish-yellow, very fine grained; oscillation ripple marks; pale-olive limy shale in upper part; light-gray marlstone and very light gray limestone in middle part; very light gray granular limestone at base. 350 feet.	
		Parachute Creek Member		Fly larvae Analcime 1.4' Main oil shale m bed Thin oil shales, 5-25 g/t Oil shale, 10-15 g/t	
		Green River Formation		May be correlative with a part of the Mahogany ledge of the Piceance Basin about 10 miles east of map area.	
		Garden Gulch Member		Shale, grayish-green, dolomitic. Contains local sand lenses. 455 feet.	
		Douglas Creek Member		Limestone, buff to brownish-gray, fine- to medium-oolitic; shale, gray-green, limy. Tongue of Wasatch Formation 0-100 feet; variegated gray and red shale and fine- to very fine-grained light gray sandstone containing abundant gastropods (<i>Gastropoda</i> sp., <i>Viviparus</i> sp.). Member sandy in basal 20 to 30 feet and has distinctive thin dark-gray limestone with corals near top. Fossil locality D3652 yielded numerous specimens of <i>Platystrophia</i> pollen. 390 feet.	
		Wasatch Formation		Fossil locality D3653 Claystone and shale, green, grayish-green, purple, and red, soft sandstone, white to ash-gray, fine- to medium grained, slightly resistant to nonresistant, very lenticular, dark chert grains common. 325 to 320 feet.	
		Fossil locality D3645B 1.5' Coal 1.0'		Sandstone, brown to yellowish-gray, fine- to very fine-grained at base becoming coarser toward top, limy, massive, rib-forming, lenticular; interbedded with yellow-gray shale, thin coals locally present in upper part. Fossil locality D3645B yielded paleontological assemblages similar to assemblages obtained from Fox Hills Sandstone, basal part of Larue Formation, and basal part of Medicine Bow Formation. 1,090 feet.	
		Barren member		Sandstone, light-brown, yellowish-gray, and very light gray, fine- to very fine-grained, limy, interbedded with gray to light-brown-gray shale and brown carbonaceous shale. Contains a few thin coal beds (1.5-2.0 ft.). Base probably marks transition from underlying marine sandstones to continental and freshwater strata. 750 feet.	
		Mesa Verde Formation		Sandstone, yellowish-gray to dirty-orange, very fine- to fine-grained, limy; interbedded with gray and brown carbonaceous shale; thickest coal beds in lower part of member. 510 to 600 feet.	
		Minor coal member		Sandstone, light-brown, yellowish-gray, and very light gray, fine- to very fine-grained, limy, interbedded with gray to light-brown-gray shale and brown carbonaceous shale. Contains a few thin coal beds (1.5-2.0 ft.). Base probably marks transition from underlying marine sandstones to continental and freshwater strata. 750 feet.	
CRETACEOUS	Upper Cretaceous	Sego Sandstone Member		Sandstone, very light gray, fine- to very fine-grained, limy. <i>Inoceramus</i> sp. at top. 30 feet.	
		Anchor Mine Tongue of Mancos Shale		Shale, brownish-gray; sandy in lower 40 feet. 40 to 110 feet.	
		Buck Tongue		Sandstone, yellow-gray to gray-orange, fine-grained. <i>Ophiomorpha</i> at base. 0 to 50 feet.	
		Tongue of Castlegate Sandstone		Shale, as below, orange weathering dolomitic concretions that contain <i>Baculites</i> ; abundant gypsum in top 85 feet. 250 feet.	
		Castlegate Sandstone		Sandstone, very light gray, weathers same, very fine grained, very porous, resistant. Upper 30 feet fine grained; contains pale-yellow-brown ferruginous sandstone concretions averaging 0.4 feet in diameter; locally a thin (0.5 ft.) coal is present at top. 50 to 70 feet.	
		Mancos Shale		Shale, brownish-gray, noncalcareous, marine; interbedded siltstone and very fine grained sandstone; thin beds of bentonite. 3,600 feet from base of Mesa Verde Formation to top of calcareous facies of Mancos Shale; only top 1,900 feet exposed.	
		Emery(?) Sandstone Member		Sandstone, orange-gray-pink, very fine grained, silty, very calcareous, slightly resistant; correlates with basal "B" zone in subsurface along Douglas Creek Arch about 12 miles southeast of map area. 15 feet.	
		Shale, as in upper part of Mancos Shale.			



EXPLANATION

Alluvial deposits
 Alluvial and colluvial deposits undivided
 Landslide deposits
 Alluvial fan
 Terrace gravels
Qt is the youngest

Uinta Formation
 Tpe
 Tgp
 Tgd
 Tm
 Tw
 Tw

Green River Formation and tongue of Wasatch Formation
 Tpe, Evacuacion Creek Member
 Tgp, Parachute Creek Member
 Tm, base of main oil shale zone
 Tgd, Garden Gulch Member
 Tm, Douglas Creek Member
 Tw, tongue of the Wasatch Formation, mapped with Douglas Creek Member of the Green River Formation south of the White River

Wasatch Formation
 U, UNCONFORMITY
 Kmcb, barren member
 Kmvc, main coal member
 Kmvm, minor coal member
 Kmvs, Sego Sandstone Member. As mapped includes Anchor Mine Tongue of the Mancos Shale which separates upper and lower parts of the Sego.

Mesa Verde Formation
 Kmb, Buck Tongue of Mancos Shale
 Kc, Tongue of Castlegate Sandstone
 Km, Main body of Mancos Shale
 e, base of Emery(?) Sandstone Member of Mancos Shale

3.3
 3.0
 2.5
 Dashed where approximately located. Thickness of coal, in feet, measured at triangle. Where more than one bed, thicknesses are shown in stratigraphic order with youngest bed at top.

Contact
 Dashed where approximately located; short dashed where inferred.

Fault, showing dip
 Dashed where approximately located; short dashed where inferred, dotted where concealed. U, upthrown side; D, downthrown side.

Lineament from aerial photographs
 Anticline
 Showing crestline and direction of plunge.

Strike and dip of beds
 70
 3400

Structure contours
 Drawn on top of the Castlegate Sandstone in most of mapped area; drawn on top of the Dakota Sandstone in northeastern part of mapped area. Structure contours drawn to show assumed migration of top of bed with depth. Contour interval 200 feet.

Fault trace projected to the top of the Castlegate Sandstone
 D3652
 Fossil locality
 U.S. Geological Survey collection number (Denver catalogue)
 California Oil Emerald 32
 Wells
 Projected into structure section
 Oil well
 Gas injection well
 Water injection well
 Abandoned well

ECONOMIC GEOLOGY

Oil and gas, coal, oil shale, sodium zeolites, and sand and gravel occur within the mapped area, but only oil and gas and sand and gravel are being exploited at the present time. Part of the Rangely oil field is included in the mapped area. The Rangely field is the only field in Colorado classified as a "giant"; that is, it has an ultimate recovery of 100 million barrels of oil or more. Production is from several formations and reservoirs along the flanks and crest of a large anticline at depths ranging from about 560 feet to more than 6,700 feet. The following table shows cumulative production figures for each productive formation (Colorado Oil and Gas Conservation Commission, 1966).

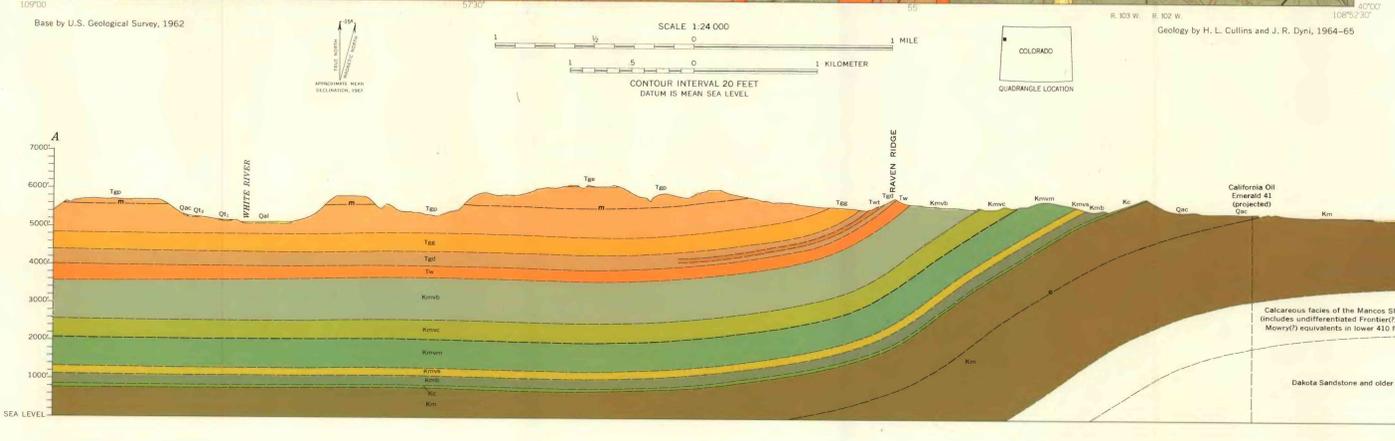
Cumulative production to January 1, 1966, Rangely field

Reservoir	Oil (barrels)	Gas (thousand cubic feet)
Mancos Shale	10,018,442	22
Morrison Formation	2,471	
Entrada Sandstone		52,293
Gartra Member of Chinle Formation ¹	212,067	51,307
Weber Sandstone	389,016,301	611,186,282
Total	379,249,201	611,200,634

¹No production is presently being obtained from the Entrada Sandstone and the Gartra Member of the Chinle Formation.
²New usage. Formerly reported as Shinarump Conglomerate.

At the present time only the Mancos Shale and the Weber Sandstone are productive in the Banty Point quadrangle. The Dakota Sandstone has yielded minor quantities of gas, but the wells have gone to water rapidly. Coal beds as much as 12 feet thick are exposed in the main coal member of the Mesa Verde Formation and beds as much as 4 feet thick are exposed in the minor coal member. Two thin discontinuous coal beds are present near the top of the barren member and locally a thin coal is present at the top of the Castlegate Sandstone. Samples collected by Gale (1910, p. 196, 197, 250) from the abandoned Hector mine in sec. 14, T. 1 N., R. 102 W., in the adjoining Rangely quadrangle show that Mesa Verde coal has a calorific value of 11,080 to 11,490 Btu (air-dried). The average sulfur content is 0.40 to 0.46 percent. The coal is classified as high volatile C bituminous (Landis, 1959, p. 150). No mines are presently operative in the mapped area. Oil shale and analcime are present in the Parachute Creek Member of the Green River Formation. Analyses of outcrop samples of the oil shale show oil yields ranging from less than 10 gallons to 25 gallons per ton. Somewhat larger yields should reasonably be expected from unweathered shale. Nine thin beds of analcime have been recognized in the Parachute Creek Member. Three of these beds occur within a 50-foot interval below the m bed and the remaining six beds occur in a 350-foot interval above the m bed. The thickest beds is 1.4 feet thick and is 250 feet above the m bed.

REFERENCES CITED
 Colorado Oil and Gas Conservation Commission, 1966, Colorado oil and gas statistics, 1965. 121 p.
 Gale, H. S., 1910, Coal fields of northwestern Colorado and northeastern Utah. U.S. Geol. Survey Bull. 415, 265 p.
 Landis, E. R., 1959, Coal resources of Colorado: U.S. Geol. Survey Bull. 1072-C, p. 181-222.



GEOLOGIC MAP OF THE BANTY POINT QUADRANGLE, RIO BLANCO COUNTY, COLORADO

By
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