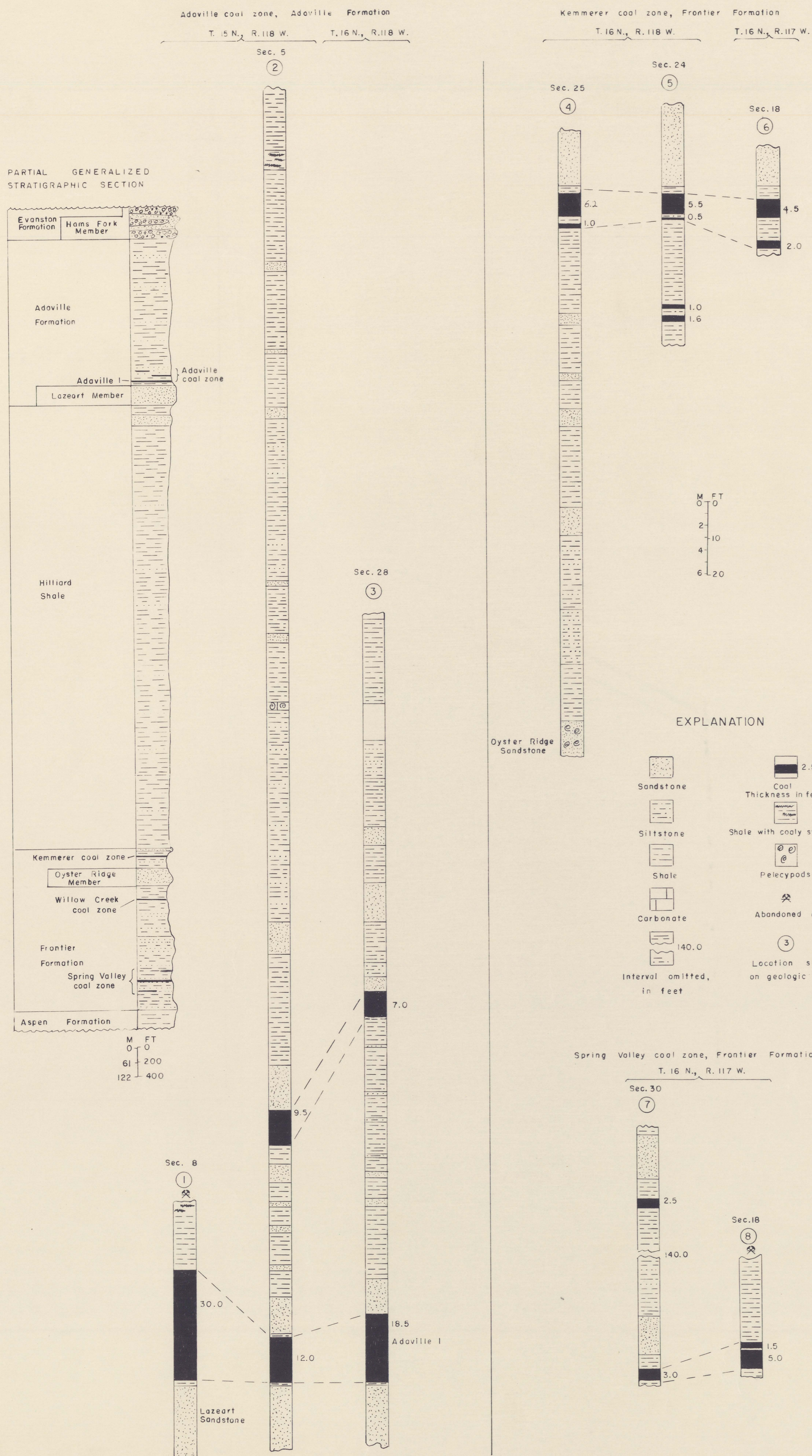


MEASURED COAL SECTIONS



Economic geology

The Ragan quadrangle was mapped as part of the U.S. Geological Survey's program of classifying and evaluating mineral lands in the public domain. The regional geology of the area was mapped and discussed by Veatch (1907). Resources of economic interest within the quadrangle include subbituminous coal, sand and gravel, and ground water; oil and gas may occur at depth. Coal resources to 3,000-foot depth are given in table 1 for both the Adaville and Frontier Formations.

Coal beds of economic thickness have long been known from the Upper Cretaceous Adaville Formation, having been first exploited in 1876 in the area west of Kemmerer, Wyoming. A typical analysis of coal from the Adaville Formation would be high in moisture, low in ash, have a Btu/lb content of about 10,400, and contain about 0.6 percent sulfur (Smith, 1972). The coal is of subbituminous B rank.

The thickest Adaville coal bed in the Ragan quadrangle (Adaville 1) lies immediately above the basal Lazear Sandstone Member and attains its greatest thickness of about 30 ft (9.1 m) at the old abandoned Lazear mine in the SE₁SW₄ sec. 8, T. 15 N., R. 118 W. Veatch (1907, p. 132) reports the small amount of production from the mine was either hauled by wagons to Evanston for local consumption or sold to local oil operators. The amount of coal currently available by strip-mining methods in the old mine area is small because of the 30° dip of the coal beds, the sharply rising slope over the mine area, and the high-angle Round Mountain fault west of the quadrangle boundary. The Adaville 1 coal bed thins northward to about 15 ft (4.5 m) at the abandoned Junction mine, 12 ft (3.7 m) in sec. 5, T. 15 N., R. 118 W., near Interstate 80, and thickens again to 18.5 ft (5.6 m) in sec. 28, T. 16 N., R. 118 W., in the northern part of the quadrangle. Although the Adaville 1 coal is thinner in the northern part of the map area, existence of a second coal bed above it, 7 and 9.5 ft (2.1 and 2.9 m) thick in sections 28 and 5, respectively, plus the relatively gentle slope to the west, give this area a greater potential for future strip mining.

Coal beds in the Frontier Formation are much thinner but have a greater Btu/lb content than those in the Adaville Formation and are exploitable only by underground mining methods. Most coal mining in the Frontier Formation has been in the Kemmerer coal zone, the highest of three such zones in the Frontier. Other coal zones are the Willow Creek, near the middle of the formation, and the Spring Valley, near the lower middle part of the formation. The Kemmerer coal zone is above the Oyster Ridge Sandstone Member, a very conspicuous, ridge-forming, white-weathering sandstone in the upper part of the formation. At the Kemmerer, Frontier, and Diamondville mines near Kemmerer, Wyo., the main Kemmerer coal bed is as much as 18.6 ft (5.6 m) thick. The rank of the Kemmerer coal is high-volatile B bituminous. Berryhill (1950) gives an analysis for a sample from the Kemmerer 6 mine, on the as-received basis, assaying 6.9 percent ash, 0.6 percent sulfur, and 12,880 Btu/lb.

In the Ragan quadrangle, the thickest coal bed in the Kemmerer coal zone is 6.2 ft (1.9 m) at an old prospect in the NE₁SW₄ sec. 25, T. 16 N., R. 118 W. The coal bed thins northward attaining a thickness of 5.5 ft (1.7 m) in sec. 24, T. 16 N., R. 118 W., and 4.5 ft (1.4 m) in sec. 18, T. 16 N., R. 117 W.

The Willow Creek coal zone is about 200 ft (61 m) below the Oyster Ridge Sandstone Member in the Kemmerer area and contains as much as 5.7 ft (1.7 m) of coal (Veatch, 1907, p. 120). The rank of the Willow Creek coal ranges from high-volatile B to A bituminous. Berryhill (1950) gives an analysis on the as-received basis of 5.5 percent ash, 1.0 percent sulfur, and 13,310 Btu/lb. These coals are of special economic value because of their coking properties.

In the Ragan quadrangle, no Willow Creek coal beds have been found. The coal beds apparently shale out southward from the Kemmerer area.

The Spring Valley coal zone has at least three beds of coal in the Kemmerer area. The rank is high-volatile B bituminous. Berryhill (1950) shows an analysis on the as-received basis of 12.2 percent ash, 0.6 percent sulfur, and 11,670 Btu/lb.

In the Ragan quadrangle, the thickest coal bed in the Spring Valley coal zone is 6.5 ft (2 m). The coal bed contains a small shale parting 1.5 ft (0.5 m) below the top of the coal at the abandoned coal mine in NW₁SE₄ sec. 18, T. 16 N., R. 117 W. The coal bed thins southward to 3.0 ft (0.9 m) in the western half of sec. 30, T. 16 N., R. 117 W. Several other thin coals or coaly shales are also present above the lower coal bed in this area. Veatch (1907, p. 129) shows a thickness of 5 ft (1.5 m) and 5.5 ft (1.6 m) at two old prospects in sec. 12, T. 15 N., R. 118 W., but these prospects are now caved in and no coal beds are exposed.

Adequate supplies of sand and gravel for road building in this area are available from the unconsolidated Quaternary deposits. Another potential source of gravel is in the Hams Fork Conglomerate Member of the Evanston Formation, but the gravel in this unit is usually very consolidated and probably available only by mining methods.

Ground water for domestic and stock use is generally derived from Quaternary deposits. Sandstones within the Frontier Formation are potential aquifers. However, because of the 30° westward dip of the Frontier, water wells west of the outcrops of Frontier would be progressively more expensive.

Significant oil and gas have not been produced within the Ragan quadrangle. However, shallow wells in the Aspen Formation have produced very small quantities of oil and gas at various times since 1900. An oil seep near Hilliard, in NW₁ sec. 4, T. 13 N., R. 119 W., southwest of the quadrangle, was one of the first recorded occurrences of oil in this general area and was used by the Mormons in their historic journey to Salt Lake City in 1847. Significant gas and condensate have now been found in the Nugget Sandstone in an Amoco wildcat, 1 Champlin-224 Amoco-A, in the NW₁SW₄ sec. 19, T. 17 N., R. 118 W., about 6 miles northwest of the northwest corner of the Ragan quadrangle. This discovery lies on the upper plate of the Absaroka thrust. Mapping in the Meadow Draw quadrangle to the north suggests that this gas discovery may be partly due to a breccia zone along the western extension of the Shurtleff Creek fault. This discovery, however, along with the thick Cretaceous section and small shows of oil and gas within the quadrangle, will undoubtedly encourage further exploration.

References

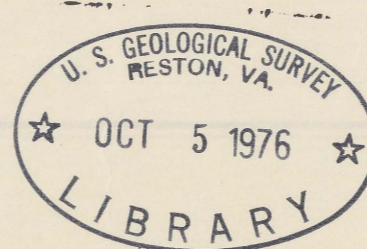
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Table 1.--Coal resources in Ragan quadrangle showing ownership of coal land in millions of short tons to 3,000-foot depth [To convert to metric tonnes, multiply by .9072]

Ownership of coal	Measured	Indicated	Inferred
Adaville Formation, T. 15 N., R. 118 W.			
Federal-----	0.125	---	---
Non-Federal-----	11.550	9.750	---
Adaville Formation, T. 16 N., R. 118 W.			
Federal-----	10,225	22,325	2,525
Non-Federal-----	16,000	32,625	6,275
Frontier Formation (Kemmerer coal zone), T. 15 N., R. 118 W.			
Federal-----	1,050	1,050	11,800
Non-Federal-----	.575	3,275	16,250
Frontier Formation (Kemmerer coal zone), T. 16 N., R. 117 W.			
Federal-----	---	---	0.025
Non-Federal-----	0.100	0.025	.700
Frontier Formation (Kemmerer coal zone), T. 16 N., R. 118 W.			
Federal-----	---	6,900	3,675
Non-Federal-----	3,300	6,200	7,725
Frontier Formation (Spring Valley coal zone), T. 16 N., R. 117 W.			
Federal-----	2,075	3,000	3,000
Non-Federal-----	.525	2,325	1,025
Frontier Formation (Spring Valley coal zone), T. 16 N., R. 118 W.			
Federal-----	---	1,975	---
Non-Federal-----	---	.800	2,600
Federal Total-----	13,475	35,350	21,025
Non-Federal Total-----	32,050	55,000	34,575

PRELIMINARY GEOLOGIC MAP AND COAL RESOURCES OF THE RAGAN QUADRANGLE, UINTA COUNTY, WYOMING

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