

OIL SHALE RESOURCES AND STRATIGRAPHY OF THE GREEN RIVER FORMATION IN WYOMING*

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ABSTRACT: The lacustrine Green River Formation of Eocene age occurs in four basins in south-west Wyoming, the Green River, Great Divide, Washakie, and Fossil. It consists of, in ascending order, the Tipton Shale, Wilkins Peak (restricted to the Green River Basin), and Laney Shale Members. In the southern and eastern part of the area a lacustrine unit, the Luman Tongue of the Green River, interfingers with the upper part of the underlying Wasatch Formation.

The Tipton is 0 to 300 feet thick and consists of oil shale that is locally intertongued with sandstone. The Wilkins Peak is 0 to 1,300 feet thick, consists of marlstone, mudstone, sandstone, and oil shale. It is well known for its many unusual saline minerals and its vast deposits of bedded trona. The Laney, 100 to about 1,900 feet thick, is principally low-grade oil shale in its lower part and principally sandstone and marlstone in its upper part. The Green River Formation inter-fingers with the fluviatile beds of the Wasatch Formation around the periphery of its depositional basin.

The oil shale is thin or of little value in the Great Divide and Fossil Basins, and data on the oil yield of the shale are insufficient to estimate oil resources in the Washakie Basin. In the Green River Basin, however, numerous assays by the U. S. Bureau of Mines of oil shale in cores and well cuttings indicate that all 3 members contain potential reserves of oil. The following table shows the estimated potential reserves of oil in shale beds that are more than 15 feet thick and that yield an average of at least 10 and 25 gallons of oil per ton.

Member	> 10 gal/ton		25 gal/ton	
	Area in square miles	Barrels of oil (billions)	Area in square miles	Barrels of oil (billions)
Tipton Shale	1,900	160	500	22 ¹ / ₂
Wilkins Peak	1,350	170	400	21 ¹ / ₂
Laney Shale	450	40	---	---
Total	---	370	---	43 ¹ / ₂

¹/₂ These reserves are included in the more than 10 gallon per ton category.

The reserves in the Tipton occur in the south-central part of the Green River Basin at depths from 0 to 3,000 feet; reserves in the Wilkins Peak are in the north-central part of the basin at depths from 0 to 1,500 feet; and reserves in the Laney are in the east-central part of the basin at depths from 0 to 1,200 feet.

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