MINERAL RESOURCES OF THE GREEN RIVER BASIN, THE RED DESERT BASIN AND THE LITTLE SNAKE RIVER BASIN, WYOMING

Horace D. Thomas

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The mineral resources of the Green River Basin, the Red Desert Basin, and the Little Snake River Basin, Wyoming, are divisible into two categories, (1) those which have been developed and from which production is obtained, and (2) those which are undeveloped but whose quantity and quality is such that they may be subject to development.

MINERAL PRODUCTS

The important mineral products of the three basins are energy-producing substances -- coal, oil, and natural gas.

Coal - At present, most of the coal production comes from the Rock Springs area and the Kemmerer area, both in the Green River Basin. In the Rock Springs district, mines are located at Rock Springs, Reliance, Winton, Superior, Dines, Quealy and Gunn. There are 6 workable coal seams ranging in thickness from 5 to 10 feet, readily accesible through slope openings, which are easily reached by branch coal-mine railroads spurs. The coal is of bituminous grade and some 300,000,00 tons have been blocked out in the district, with large areas not yet prospected. The total reserves of the Rock Springs district have been estimated to be 72,762,123,000 tons of mineable coal (U.S.G.S. Bulletin 381, p. 281).

In the Kemmerer district, coal is mined at several communities and there are three important seams of bituminous coal from 5 to 20 feet in thickness and numerous seams of sub-bituminous coal from 6 to 50 feet in thickness. The Union Pacific Railroad has estimated that there are 50,000,000 tons of mineable bituminous coal, with large areas unprospected, and 20,000,000 tons of sub-

bituminous coal, subject to mining in the district. The total reserves of the belt of coal-bearing rocks along the western margin of the Green River Basin cannot be accurately estimated but represent tens of billions of tons of coal.

The Little Snake River coal field extends through the Little Snake River Basin from Rawlins southward to the southern boundary of Wyoming, in the vicinity of Baggs. The coal occurs in three different geological units and is mainly of sub-bituminous grade. There are no large commercial mines in the field nor are there accurate figures available on the total reserves.

The Great Divide Basin coal field lies in the Red Desert Basin, with one sequence of coal-bearing beds extending northward from Rawlins to the vicinity of the Lost Soldier Oil field and the other occupying the central part of the basin in the area north of Wamsutter. There are no large commercial mines in the field and there are no figures available on the reserve of sub-bituminous coal available in the area.

Coal also occurs in the drainage basin of Henry's Fork, along the Utah-Wyoming border, but the reserves there are small in contrast to the other areas.

It is impossible to calculate the total tonnage or the value of the coal which has been produced in the Green River, Red Desert, and Little Snake River basins since annual production is reported by counties. Production for the last five years for which figures are available, 1935-1940, for Lincoln and Sweetwater counties, and which essentially represent production for the Green River Basin, are as follows:

Production in tons

Year	Sweetwater County	Lincoln County
1935	3,258,811	474,474
1936	3,583,582	496,243
1937	3,548,870	496,191
1938	3,315,814	426,490
1940	3,849,691	452,225

Petroleum and natural gas - Petroleum and natural gas are produced in the basins in question from three main areas, (1) in the northeastern part of the Red Desert Basin, (2) in the southeastern part of the Green River Basin, and (3) along the western margin of the Green River Basin.

Because the outlines of the productive areas of many of the known fields have not been determined, it is impossible to estimate the total oil or gas reserves. Large areas in the Green River and Red Desert basins remain unexplored by drilling and it is almost certain that new fields will be found in the future. The value of the oil produced cannot accurately be given since many of the oil fields produce oil of different grades from different sands which command different prices, and in the production figures available the various grades of crude are not separated. The producing oil and gas fields, their locationsand production are given in the following tables:

RED DESERT BASIN - OIL AND GAS FIELDS

PRODUCING OIL FIELDS

Ferris and East Mahoney

Location: Tps. 25 & 26 N., Rs. 87 & 88 W.
Production: 481,686, bbls. (1919-1940 inc.)

G.P. Dome

Location: T. 25 N., R. 86 W.
Production: 173,000 bbls. approx. (1919-1940 inc.)

Lost Soldier

Location: T. 26 N., R. 90 W.
Production: 20,617,566 bbls. (1916-1940 inc.)

Mahoney

Location: Tps. 25 & 26 N., R. 88 W.
Production: 295,064 bbls. (1938-1940 inc.)

Wertz

Location: T. 26 N., R. 89 W.

Production: 2,245,012 bbls. (1921-1940 inc.)

PRODUCING GAS FIELDS

Bunker Hill

Location: T. 27 N., R. 89 W.
Production: 258,543,000 cu.ft. (1939-1940 inc.)
Valuation: $12,927.15 (@ 5¢ per thousand cu. ft.)

Ferris (including Middle and West Ferris)

Location: T. 26 N., R. 87 W.
Production: 33,700,281 cu. ft. (1919-1940 inc.)
Valuation: $1,348,011.24 (@ 4¢ per thousand cu. ft.)

Lost Soldier

Location: T. 26 N., R. 89 W.
Production: 21,096,241,000 cu. ft. (1916-1940 inc.)
Valuation: $843,853.64 (@ 4¢ per thousand cu. ft., but since much of this gas has been used for repressuring this does not represent actual sale value.)

Mahoney

Location: Tps. 25 & 26 N., R. 88 W.
Production: 51,303,541,000 cu.ft. (1919-1940 inc.)
Valuation: $2,052,141.64 (@ 4¢ per thousand cu. ft.)

Wertz

Location: T. 26 N., R. 89 W.
Production: 63,477,390,000 cu. ft. (1920-1940 inc.)
Valuation: $2,539,095.60 (@ 4¢ per thousand cu. ft.)

OTHER OIL OR GAS FIELDS

The Sherrard gas field, in Tps. 24 & 25 N., and Rs. 88 & 89 W., has been discovered since 1940.

GREEN RIVER BASIN - OIL AND GAS FIELDS

PRODUCING OIL FIELDS

Labarge

Location: Tps. 26 & 27 N., R. 113 W.
Production: 6,557,116 bbls. (1924-1940 inc.)

Spring Valley

Location: T. 15 N., R. 118 W.
Production: 193,185 bbls. (1900-1940 inc. Field has been essentially abandoned since 1912)

PRODUCING GAS FIELDS

Baxter Basin

Location: Tps. 16, 17 & 18, R. 104 W.
Production: 49,221,584,000 cu. ftl (1922-1940 inc.)
Valuation: $1,968,863.36 (@ 4¢ per thousand cu. ft.)

Hiawatha (Wyoming portion only)

Location: T. 12 N., R. 100 W.
Production: 8,947,225,000 cu. ft. (1926-1940 inc.)
Valuation: $357,889.00 (@ 4¢ per thousand cu. ft.)

OTHER OIL OR GAS FIELDS

North Hiawatha: A small undeveloped gas field in T. 13 N.,R. 99 W.

Canyon Creek: A small undeveloped gas field in T. 12 N., R. 101 W.

Big Piney: Several wells have developed small oil or gas flows in T. 29 N., R. 113 W., but the field is not of commercial importance at this time.

Dry Piney: This small semi-commercial field, in T. 28 N., R. 114 W., is now essentially abandoned.

Other Mineral Products - The only other mineral product commercially exploited at present is Glauber's salt, or sodium sulphate, which occurs in chemically pure form about 26 miles north of Rawlins, in the northeastern part of the Red Desert Basin. The salt is obtained through the evaporation of concentrated lake water.

UNDEVELOPED MINERAL RESOURCES

Located within the Green River Basin are large deposits of various rocks which are potentially valuable for certain contained chemical compounds or substances. These are trona (sodium carbonate), leucite (a potash rock), phosphate rock (tricalcium phosphate), and oil shale.

Trona - Three core holes drilled near Black's Fork, about 15 miles west

of Green River, have established a reserve of 150,000,000 tons of trona which is shown by one analysis to contain 82.5% sodium carbonate and sodium bicarbonate. The deposit lies at a depth of about 1,550 feet below the surface and on the basis of geological inference probably underlies a very large area. At one time sodium carbonate was produced from a series of shallow wells near the town of Green River. Sodium carbonate is a valuable industrial chemical used in the manufacture of glass, soap, paper and chemicals, in the textile and dye industries, and in petroleum refining.

Leucite - Near Superior, in the eastern part of the Green River Basin, is a large deposit of leucite -- a rock which carries over 11% potash. At present there is no practical method of extracting the potash but experiments have suggested that potash might be recovered through a base-exchange with sodium carbonate, which is available nearby. It has been estimated that there are 1,420,000,000 tons of leucite in the area which would yield 83,000,000 tons of potash if a recovery of 8% could be effected. Potash finds its main use as a fertilizer and in industrial chemicals.

Phosphate rock - In westernmost Wyoming there are large deposits of bedded phosphate rock but most of these lie beyond, but adjacent to, the western margin of the Green River Basin. At certain localities in the area north of Kemmerer there are such deposits, however. The rock carries from 60% to 70% tricalcium phosphate and although none of the Wyoming deposits are being utilized it is known that the rock is amenable to treatment to produce super-phosphate for use as a fertilizer. The raw ground rock is known to possess value as a fertilizer when used on certain types of soil.

Oil Shale - Encircling the Green River Basin is a broad outcrop of rocks known to contain certain beds which will yield petroleum through destructive distillation. As yet the quantity and quality of the oil shale remain undetermined,

but sufficient evidence is at hand to indicate that the total tonnage is high and that a large reserve of petroleum is present in the extensive beds.

Summary of Undeveloped Mineral Resources - The most important undeveloped mineral resources of the Green River, the Red Desert, and the Little Snake River basins are those which are potentially valuable as industrial chemicals or as fertilizers. Deposits of other rocks and minerals are known to occur but most are of questionable commercial value, such as dakeite, a radium-bearing mineral known to occur in the Red Desert Basin; ammonium alum, present south of Wamsutter in the Red Desert Basin; copper ore, known along the west flank of the Sierra Madre Mountains on the margin of the Little Snake River Basin; manganese ore, occurring near the southern end of the Wind River Mountains in the Green River Basin; and others.