
CHAPTER 1

Introduction and Background

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The oil shale deposits of the Green River formation occur in several geologic basins in Colorado, Utah, and Wyoming and underlie some 17,000 mi² (11 million acres) of terrain. Nearly 72 percent of the land, overlying about 80 percent of the oil shale resource, is in the public domain and is controlled by the U.S. Department of the Interior (DOI). Most of the Federal land is located near the depositional centers of the basins and contains the thickest and richest oil shale deposits. The remaining lands are controlled by individuals, private companies, and the governments of the three States.

Oil shale lands were acquired by the States under the provisions of their respective statehood enabling acts. Private holdings were acquired during the late 19th and early 20th centuries by individual homesteaders, by the railroads during construction of the transcontinental rail line, or through patenting of placer mining claims for oil shale and other minerals. The railroad lands comprise odd-numbered sections of each township within 20 miles on either side of the railroad right-of-way through the Wyoming oil shale basins. The total acreage of these holdings is very large, but commercial development is inhibited by the small size of individual tracts, by their distribution in a checkerboard pattern, and by the relatively poor quality of the oil shale resource. It is possible that the railroad properties could be developed in conjunction with leasing contiguous State or Federal sections. At present, however, the best opportunities for development on private lands appear to lie with the holdings that have descended from homesteads and mining claims.

The Mining Law of 1872 and the Petroleum Placer Act of 1897 did not specifically mention oil shale, and it was not until 1920 that shale was finally determined to be subject to the placer provisions of the two laws. Prior to 1920, however, they were interpreted to allow oil shale to be characterized as a locatable mineral which permitted prospectors to

acquire Federal oil shale lands by staking and filing placer mining claims, performing a few hundred dollars worth of work on the claim site, and paying small fees to purchase "patents" that conveyed ownership of both surface and mineral rights. Physical discovery of the deposits was required. This requirement, coupled with that for assessment work, resulted in the location of claims along eroded water courses where the deposits are visible and easily accessible.

Numerous placer claims were filed during the petroleum shortages of 1915-20, and patents for many of these were obtained by the prospectors or their successors. Today, these patented claims, together with the earlier homesteads, comprise the privately owned oil shale lands in Colorado and Utah. Individual claims and homesteads were originally quite small because of size restrictions imposed by both homesteading and mining laws. However, many of these small tracts were subsequently purchased by large firms and were unified into much larger development blocks.

Today, private interests (including the railroad) have clear title to 21 percent of the oil shale lands in Colorado's Piceance basin, 9 percent of Utah's Uinta basin, 24 percent of the Green River basin in Wyoming, and 10 percent of Wyoming's Washakie basin. In general, the private holdings are located near the peripheries of the basins and contain thinner deposits of lower grade oil shale than do the Federal lands near the basin centers. Some private tracts do contain high-quality shale, and some are large enough to sustain a major facility. For example, Union Oil Co.'s 29,000 acres in Colorado are distributed over three noncontiguous tracts, at least two of which should contain sufficient oil shale for long-term development. In contrast, the holdings of some other firms, although similar in total acreage to Union's, are subdivided into numerous small tracts that are scattered across the basins. For example, EXXON Corp. owns over 10,000 acres in the Piceance

basin, but this land is distributed over about 30 noncontiguous tracts. It is questionable that any single tract would be large enough for commercial development.

Despite disadvantages with respect to tract size and resource quality, it should be possible for a substantial industry to be initiated on private holdings. Some companies have taken preliminary steps along this path when economic conditions have appeared especially favorable. But, private landowners (generally major energy companies) have traditionally declined to commit to large-scale development pending a clarification of the Government's position with regard to private access to public oil shale resources. If industry did invest in private tracts the Government could subsequently permit development on adjacent Federal lands that, according to industry, had greater profit potential.

As noted above, the private sector was first allowed access to public oil shale lands over a century ago, by passage of the 1872 Mining Law. The 1920 Mineral Lands Leasing Act ended the process of claiming Federal oil shale lands and imposed a leasing process to promote private mining of oil shale and specific other minerals. The Act empowered the Secretary of the Interior to lease to any qualified person or corporation "any deposit of oil shale . . . belonging to the United States and the surface of so much of the public lands containing such deposits, or land adjacent thereto, as maybe required for the extraction and reduction of the leased minerals . . ." The Secretary was required to assess annual rentals of 50 cents per leased acre, and the maximum size of an individual tract was limited to 5,120 acres (8 mi²). No individual or firm could hold more than this acreage under lease in the United States. Except for these provisions, the Secretary was given broad discretionary powers to select lease tracts and to shape the terms of development leases. Five oil shale lease applications were filed with DOI after 1920. Three leases were issued, but all were subsequently canceled.

In the early 1920's, during the Harding administration, Secretary of the Interior Fall

was alleged to have accepted bribes from an oil company in consideration of noncompetitive leasing of Naval Petroleum Reserve No. 3—the Teapot Dome field in Wyoming. In 1930, during the era of caution that followed the Teapot Dome scandals, President Hoover issued Executive Order 5327, which withdrew oil shale lands from leasing under the Mineral Leasing Act and "temporarily" reserved them for the purpose of "investigation, examination, and classification." Since 1930, the temporary order has been modified on a few occasions. In 1933, for example, Hoover's Executive Order 6016 permitted oil and gas leases on the oil shale lands, and in 1935, President Roosevelt's Executive Order 7038 authorized prospecting permits and development leases for sodium-bearing minerals. The order has also been modified from time to time to permit reserve exploration and disposition of specific surface rights in limited areas. With these exceptions, Hoover's order remained in effect and essentially unaltered for over 40 years. No oil shale leases were issued during this period.

In 1952, President Truman issued Executive Order 10355, which authorized the Secretary of the Interior to rescind the withdrawal order. Subsequent Secretaries, however, have been reluctant to exert the authority for fear of creating the environment for a leasing scandal like Teapot Dome. In 1965, testifying before the Senate Committee on Interior and Insular Affairs, Undersecretary of the Interior John Carver, Jr., described the situation as follows:

The Secretary has not yet determined what recommendation should be made to Congress, if any, for the resolution of any policy questions prior to the lifting of the withdrawal order . . . No Secretary . . . can take any more than tiny and tentative steps which have the effect of relinquishing title to this resource without running great risks of misinterpretation . . . This reserve is so big and so valuable that . . . it tends to freeze any kind of action, either congressional or administrative,

Interior's hesitation was compounded by the uncertain status of unpatented mining claims

on much of the Federal land and by a prevailing feeling that shale oil was not needed by the Nation,

From time to time, administrative inaction proved unacceptable to congressional delegates from Colorado, Utah, and Wyoming. These legislators, with urging from State officials and the energy industry, pressed DOI to lease the Federal oil shale lands with the rationale that development was in the Nation's interest, would provide indigenous energy supplies, and would convey economic benefits to the State and Federal Governments.

In the 1960's and early 1970's, such pressure contributed to the formulation of two different but related leasing attempts. The first was promulgated as part of a comprehensive oil shale program in the Johnson administration by Secretary of the Interior Stewart Udall between 1964 and 1968. Udall's lease offerings failed to attract private participation. Other portions of his program were carried forward into the Nixon administration, however, where they were supplemented by the Federal Prototype Oil Shale Leasing Program under the direction of Secretaries Hickel and Morton. The Prototype Program was successful in that private capital was committed to four lease tracts in Colorado and Utah. The Program is continuing today, although in substantially modified form.

An understanding of the evolution of the 1968 attempt, and of the past, present, and possible future of the Prototype Program, is important to the formulation of effective Federal oil shale policies. This volume provides a history of both programs. Its purpose is to convey background information for answering the following questions:

- What political, economic, and energy supply situations prevailed when the programs were initiated and how did these situations affect industry's response to the lease offerings?
- How did the terms of the lease offerings affect their relative successes?
- What forces and factors affected the course of the Prototype Program?
- How has the Program succeeded or failed in meeting its objectives?
- What are its possible futures?

Discussion begins with historical accounts of the two leasing programs, including analyses of the forces at play during their evolutionary phases. The programs are then contrasted in an attempt to explain why the Prototype offering attracted private capital while its predecessor did not. Finally, the objectives of the Prototype Program are reiterated, and the Program's status is analyzed to determine whether its objectives have been achieved or are likely to be achieved, given the current energy situation and economic climate.

The Prototype Program has been affected by all of the key issues that currently cloud the future of the U.S. oil shale industry. Included are legal issues associated with land-ownership, environmental issues surrounding the potential effects of development on the area's ecosystem, uncertainties associated with the development and promulgation of regulations under the National Environmental Policy Act and other legislation, economic issues regarding the cost of producing shale oil for use in an uncertain energy future, and technological issues associated with emerging processes. These larger issues are discussed at length in volume I because their effects will be felt in all future approaches to development, regardless of whether they are conducted within the aegis of an expanded Prototype Program or as parallel efforts external to the Program. Issue analysis is intentionally brief within this volume, and issues are discussed only as required to clarify their effects on the character and progress of the Program.